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**Janna Weiss**

**1998**

**DIAGNOSTIC CONCEPTS AND MEDICINAL PLANT USE  
OF THE CHATINO (OAXACA, MEXICO)  
WITH A COMPARISON OF  
CHINESE MEDICINE**

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**by**

**JANNA WEISS, B.A.**

**DISSERTATION**

Presented to the Faculty of the Graduate School of  
The University of Texas at Austin  
in Partial Fulfillment  
of the Requirements  
for the Degree of

**DOCTOR OF PHILOSOPHY**

**THE UNIVERSITY OF TEXAS AT AUSTIN**

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## **Dedication**

**To Bugis**

**Robert "Bubba" Louis Cargas**

**who walked softly on this earth and loved its creatures.**

## Acknowledgements

A project of this nature is never a solitary endeavor. I am grateful to many people who have helped me along the way. I feel my words are not adequate to the task. Although I acknowledge some here by name, I am no less grateful to many others who do not find their names here.

I am indebted to all my Chatino teachers for their trust, openness, generous hospitality, honesty, for sharing their dreams and knowledge, and especially for teaching me the importance of prayer, and about the flight of the soul. I hope this work proves worthy of their trust.

Certain individuals were particularly gracious and generous hosts, even going the extra length to heat bath water for me when I had infections, for fear I would catch cold. I recall with warmth being given a tortilla with salt, a tamale with ants, **chaja ndaa** (a tortilla baked with black beans ground into the masa), a taco with wild mushrooms, pumpkin seeds, as well as many meals in many homes. Close to my leaving, I was touched by the offers of a parcel of land to make my home in Zenzontepec. I remember one man, sick with dysentery, who helped me carry my full plant press up a steep grade when a burro couldn't be found. I am as grateful for the humble petate on an earth floor as I am for the



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The Chatino say, "Here where we live is very ugly," because narrow mountain paths are considered ugly, and wide roads are "beautiful." One reason I chose Zenzontepec is because I love the mountains, and to me narrow paths are wonderful to walk on, where I feel connected to nature, strong, with my feet on the earth. To me, coming from a world paved in ugly concrete and asphalt, the earth impounded, your narrow paths are indeed beautiful. The views along them are spectacular, and of course I love the plants. I collectively acknowledge the municipalities of Santa Cruz Zenzontepec and Tataltapec de Valdéz. This work belongs to the Chatino.

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Publication No. \_\_\_\_\_

Janna Weiss, Ph.D.

The University of Texas at Austin, 1998

Supervisor: Beryl B. Simpson

This dissertation focuses on the relationship between traditional medical concepts and corresponding medicinal plant use through a comparison of diagnosis and treatment among the Chatino of Oaxaca, Mexico (and to a lesser extent among the Zapotec and Chinantec) and Chinese medicine. Both cultures classify symptoms and medicinal plants according to similar medical concepts such as "heat," "cold," "blood" and "wind." This correspondence between symptom and plant folk classification forms an important basis for treatment. Diagnostic concepts of Chatino medicine were examined in depth, based on two years of ethnomedical and ethnobotanical fieldwork in Oaxaca, Mexico. A detailed ethnographic description of Santa Cruz Zenzontepec, the main study site,



and a presentation of Chatino medicine comprise a major portion of the dissertation. Theoretical issues, such as classification by personalistic and naturalistic etiologies, that pertain to the comparative study of Non-Western medicine and are relevant to an appreciation of the importance of diagnosis to plant use are addressed. Chatino and Chinese medical concepts are discussed in a cross-cultural context, delineating areas of comparability and divergence in the medical concepts and their associated symptoms. Chinantec plants for blood from Browner's published data were analyzed for possible correlation between chemical components and the traditional illness categories using cluster analysis. Patterns of broad chemical classes corresponded to the illness categories. A procedural method for systematic examination of the relationship between plant chemistry and plant use was developed and the results should be predictive for plants with analogous uses across cultures.

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## **Chapter 1: Introduction**

### **RESEARCH OBJECTIVES**

My dissertation focuses on the relationship between traditional medical concepts and corresponding medicinal plant use. I explored this relationship through a comparison of diagnosis and treatment among the Chatino of Oaxaca, Mexico (and to a lesser extent among the Zapotec and Chinantec, also Oaxacan indigenous groups) and Chinese medicine. Based on the literature (e.g., Anderson 1987, Bastien 1987, Currier 1966, Foster 1985, Ingham 1970, Rivas 1991), New World medical concepts appeared to resemble concepts in Chinese medicine. Relying on Foster (1983, 1985), I expected that both Chatino and Chinese medicine were naturalistic and humoral (see Chapter 6 for a discussion of naturalistic and Chapter 8 for a discussion of humoral). In both Chatino and Chinese medicine, diagnosis is based on the assessment of clinical symptoms and signs (for a discussion of the relationship among symptom, etiology and diagnosis, see Chapter 5). Both categorize symptoms and plants by similar traditional medical concepts, such as by their "hot" and "cold" natures. This correspondence between symptom and plant folk classification forms an important basis for treatment (e.g., Browner 1985a, b, Foster 1985, Kaptchuk 1983, Messer 1991).

My research interest arose from practical problems in clinical herbalism I encountered. I first asked my basic question: is there a relationship between the taxonomy or chemistry of the plants and the traditional medical diagnostic



categories for which plants are used, when I was a student of Chinese medicine in 1981. The question came up again during my clinical practice, as I adapted use of European herbs to Chinese diagnostic categories. As I struggled to find European herbal analogues to plants for Spleen Qi Deficiency and Kidney Yin Deficiency by interpreting lists of symptoms for which the European plants were used, I wondered if phytochemistry might provide a sounder basis for such correlations. In Chapter 6, I have made progress towards my goal of looking for correlations between plant chemistry and the traditional medical categories for which the plants are used, although not at the cross-cultural level.

I sought an appropriate and feasible context within which to pose my basic question. Kleinman's "Patients in Healers in the Context of Culture" (1980) set me to thinking in cross-cultural comparative terms. Joseph Bastien's (1987) work on the Kallawaya struck me as so resembling aspects of Chinese medicine that I first dismissed it as too familiar. I was drawn back to Bastien's work when I realized that some similarity might provide a legitimate framework for comparison. From Bastien and other readings on New World medicine, I found similar concepts, such as hot, cold, blood, vital force, repeated and apparently ubiquitous throughout Latin America. The University of Texas Plant Resource Center's interest in plants of Mexico, and physical proximity were reasons for choosing Mexico.

Following Foster's (1976) distinction of personalistic and naturalistic medical systems, I sought to avoid Mesoamerican cultures whose primary focus of healing resided in the supernatural. I also wanted to be sure I would find the basic concepts essential for my comparative approach. Literature on Oaxaca

(e.g., Messer 1978, 1987, Mathews 1983, Molony 1975) indicated not only presence of hot and cold but also classifications of blood disorders (Browner 1985a, b) that echoed Chinese concepts with which I was familiar. Hence medical beliefs in Oaxaca seemed to be more naturalistic than among the Maya (e.g., Fabrega and Silver 1973). To my surprise, dismay and gradual edification, Chatino medicine turned out to have a strong metaphysical/magical component.

To embark on the cross-cultural comparison, I first needed to examine the diagnostic concepts of Chatino medicine in depth, to determine fully the precise nature of the symptoms and etiologies involved in diagnosis and plant use. Establishing a good understanding of Chatino medicine was also necessary to be able to take a broad spectrum of traditional medical concepts into account in my analysis (see Chapter 8 for references critiquing studies limited to hot-cold concepts). Towards this in-depth study of Chatino medical concepts and related plant use, I spent two years conducting ethnomedical and ethnobotanical fieldwork in Oaxaca, Mexico (see Methodology below). Chapter 2, devoted to an overview of the Chatino, includes a detailed description of my main study site, Santa Cruz Zenzontepec, and contributes to the ethnographic literature on the Chatino of Zenzontepec. Chapter 3 gives a detailed presentation of Chatino medicine (as practiced in Zenzontepec), in which I clearly establish the parameters of Chatino medical concepts. These two chapters comprise a significant portion of the dissertation. Additional work in a second Chatino community, Tataltepec, awakened my interest in the relationship between biodiversity, cultural and intra-cultural diversity and medicine, and provides greater depth to my study of Chatino medicine (Chapter 3).

My second goal was to examine the cross-cultural similarities and differences of the diagnoses and symptom-based medical concepts. Chapter 4 provides the reader with an overview of Chinese medicine. The cross-cultural discussion (Chapter 6) is preceded by Chapter 5, entitled "An Integrative Approach to Non-Western Medicine," in which I cover a number of fundamental theoretical issues relevant to the comparative study of Non-Western medicine (personalistic-naturalistic, the relationship between symptom and etiology), and to an appreciation of the importance of diagnosis to plant use (see below for a discussion of the terms "the West" and "Western"). In Chapter 6, I discuss Chatino (and to a lesser extent Zapotec and Chinantec) and Chinese medical concepts in a cross-cultural context, delineating areas of comparability and divergence in the medical concepts and their associated symptoms. Once similarities and differences between the medical concepts were elucidated, I could proceed towards my third and final goal, to look for possible correlations between plants used for similar illness categories in Mexico and China.

Of course, due to the great geographic disparity of Mexico and China, the medicinal plants used by each are different. Nevertheless, I hypothesized that different plants used for a common traditional diagnosis would have some underlying aspect of plant chemistry or pharmacology in common. A cross-cultural perspective provides a data set useful for analytical purposes, and the possibility of the results having more general applicability to an understanding of the role of plants in treating illness. Comparison of two cultures that have a *similar* medical conceptual framework but use *different* plants as medicine is a novel approach in comparative ethnobotany and ethnomedicine.

## **METHODOLOGY: DATA COLLECTION**

### **Fieldwork in Oaxaca, Mexico**

For the aforementioned reasons, the state of Oaxaca, Mexico, was found to be especially appropriate for comparative work in Latin America (Fig. 1.1). Moreover, Oaxaca has a large indigenous population, traditional medicine is widespread, and the region is botanically diverse (Lorence & Mendoza 1989). The main focus for this project was with the Chatino Indians of the Sierra Madre del Sur. I was especially interested in the Chatino region as the Sierra Sur had little botanical documentation (Lorence & Mendoza 1989) and the traditional medicine of the Chatino region had not been studied.

Santa Cruz Zenzontepec, my main field site, is a Chatino municipality in the district of Sola de Vega of the Sierra Madre del Sur (see Chapter 2 for a detailed description of Zenzontepec). Zenzontepec is a poor and remote, dry, agave-dominated region with little Spanish influence (Greenberg, pers. comm.). The preservation of traditions in Zenzontepec, the fact that virtually no ethnographic work had been done in the area, and the relative lack of violence compared to other parts of the Sierra Sur, were additional reasons to select Zenzontepec. Tataltepec de Valdéz, a village at the foothills of the Sierra Sur that borders on Zenzontepec to the south, was a second Chatino field site which I chose for contrastive purposes, that met with my criteria of having a large mestizo population and distinct flora.

I also collected plants with, and observed the practices of, two Zapotec curers in the valley of Oaxaca. Work among the Zapotec lent perspective to my

understanding of Chatino medicine. I additionally spent two weeks in the Sierra Juárez Chinantec community in which Carole H. Browner (1985a, b) did her work, to look for symptoms that might be associated with the blood disorders and associated medicinal plants she described, and that might be helpful in my analysis of her data (Chapter 6).

During the summer of 1991, I conducted preliminary research in Oaxaca with the support of the Tinker Foundation and a University of Texas Institute of International Education (IIE) scholarship. Instituto Nacional Indigenista (INI) provided my initial opportunity to meet healers from Zenzontepec at a gathering of Chatino traditional healers in Juquila in 1991.

My main fieldwork period extended for two years, from January 1993 to December 1994. I spent approximately eight months in the Chatino region, in the Sierra Madre del Sur (including about one month in Tataltepec), and the remainder in the valley of Oaxaca. I first visited Zenzontepec in February 1993 and my last visit to the area was in October 1994. Visits to the area lasted from two to five weeks at a time. A period exceeding one year was recommended for ethnobotanical fieldwork to allow for return visits to field sites at different seasons in order to collect fertile specimens (R. Bye, pers. comm.). My fieldwork was generously funded by Fulbright-García Robles, the Organization of American States, the Charles A. and Anne Morrow Lindbergh Fund, and a University of Texas Continuing Fellowship.

In Oaxaca, between field excursions, I entered collection data, indexed field notebooks, expanded my Spanish literature sources, stored plants and purchased medicines and food before returning to the field. I encountered

considerable difficulties obtaining a permanent room in Zenzontepec and so practiced a peripatetic ethnobotany. While the lack of a permanent base entailed considerable physical discomfort, I also gained perspective from visiting many communities at different altitudes.

Based on my preliminary experience with Zapotec *curanderos* (healers) in Oaxaca, I originally planned to conduct research with healers in their clinical settings, and to compare our respective diagnoses of individual patients on a case by case basis. Since Chatino healers were not primarily herbalists, and herbal knowledge was widely distributed in the general population, I had to change my original focus from observation of healers to interviewing the general population. Therefore, instead of focusing on particular healers, I began to treat with acupuncture, and drew a broad segment of the population who were willing to discuss specific illness episodes and the plants they used.

Acupuncture provided me a wonderful opportunity for research, as I was able to elicit information on specific illness episodes, including symptoms, etiology, past treatments sought, and medicinal plants used. People described their own experiences with illness, experiences of others they had encountered, and their general knowledge of plants and medicine, both in and out of the treatment setting (see below for a discussion of ethnographic and clinical interviews). Acupuncture was also a way of compensating individuals and the community for teaching and hospitality rendered. I quickly found myself in great demand, with invitations to numerous villages, far beyond what I was able to oblige.

In the acupuncture treatment setting, people were forthcoming with personal information that is not often readily available to anthropologists. Illness episodes are sporadic and usually private affairs, hence anthropologists studying illness have tended to rely on "interviews conducted after the fact" (Fabrega 1974: 43). My reception by the community as a colleague and healer and the high demand for my services circumvented the usual problems encountered by anthropologists in accessing information on specific illness episodes.

I interviewed over 200 individuals in the Zenzontepec area from at least sixteen communities regarding beliefs relating to illness and symptoms of specific illness episodes. I collected approximately 200 medicinal plant species in the region of Santa Cruz Zenzontepec and her pertaining communities. I visited eight communities in the municipality (with overnight stays), including high, middle, and low elevations (2000m, 1500m, 1000m). (I briefly visited an additional five communities in the municipality.) This broad information base is the strength of my fieldwork.

The issue of variation between informants, and the extent of shared culture in Mexican traditional medicine were extensively addressed by Garro (1986), Mathews (1983), Romney et al. (1986), Romney and Weller (1984), Weller (1983, 1984), and others. Based on these studies, I expected a high degree of consistency between individuals within a community. Indeed, my findings support those of Garro (1988 in Maffi 1994: 8), Maffi (1994: 8) and Berlin and Berlin (1996) that description of illness experience stems from a common cultural pool of knowledge.

I communicated with my Chatino teachers primarily in Spanish (see Chapter 3 for a description of Chatino idiom retained in Spanish). From the outset I felt ambivalence about devoting time solely to language study, when I was immediately accessing valuable information on plants and illnesses. Over the period of my field stay I gradually acquired a Chatino vocabulary of illness terms, including pain, various bodily sensations and symptoms, and many plant names and parts. By the time I left the field I was able to understand simple conversations.

Exchange of gifts is customary in these communities, while direct payment was inclined to generate animosity and distance. I engaged in this customary exchange, generously compensating my hosts. In addition to acupuncture, I exchanged gifts of food and clothing, jewelry, toys and books.

### **Illness Data Collection**

My background in Chinese medicine was instrumental for gathering data on illness and medicinal plants in the field, and provided the conceptual basis for comparison with Chatino traditional medicine in the analysis phase. Case histories for patients were obtained by a combination of methods. I examined patients and questioned them, or their accompanying family members, about their illnesses in accordance with the general guidelines of a Chinese medical format. This included observation of face, body, tongue, inquiry of chief complaint, onset, duration, etiology, treatment, appetite, sweat, BM/urine, menstruation, sleep, location and type of pain, and palpation of pulse (see Chapter 4, Table 4.3 for a sample interview sheet). This mode of questioning included both true/false and



open-ended questions that elicited the patient's explanatory model for the illness (e.g., Agar 1980, Briggs 1986, Spradley 1979a, b, Van Mannan 1988) as well as essential clinical information for determining a Chinese diagnosis.

Interviews were unstructured and did not involve completion of a standard form. This relaxed style of questioning facilitated patient narrative accounts (Mishler 1986: 118-119) of illness experience. Despite the incomplete or haphazard nature of the data, information on illness experience was adequate to the ethnographic task as described by Mishler (1986: 7), "namely, to understand what respondents mean by what they say in response to our queries and thereby to arrive at a description of respondents' worlds of meaning that is adequate to the tasks of systematic analysis and theoretical interpretation."

### **Ethics, Empowerment and Intellectual Property Rights**

Respondent empowerment is one goal of ethnographic research. Mishler (1986: 118-119) states that when "respondents speak in their own 'voices'," they are likely to tell 'stories'," and the product of such empowerment is "narrative accounts." Mishler further states that "to be empowered is not only to speak in one's own voice and to tell one's own story, but to apply the understanding arrived at to action in accord with one's own interests." To some extent I have decontextualized Chatino illness narratives, for the sake of sorting out the meaning of individual terms. I hope my systematic presentation of the ideas contained in the narratives stimulates discussion with Chatino colleagues about their medical beliefs and empowers practice.

I quickly found, in my first summer in Oaxaca, working with Zapotec curers, and again later with the Chatino, that when I introduced Chinese medical concepts in an attempt to initiate dialog contrasting Chinese concepts with their own knowledge, individuals quickly adopted my Chinese terms and used this rudimentary knowledge of Chinese medicine to explain their own illness and treatment episodes. Therefore, I tended to withhold information on Chinese medicine when asked by the Chatino, for the sake of obtaining an "objective" and unsullied understanding of Chatino beliefs and practices, at the price of empowerment through information exchange. Instead, my own interpretation or "translation" of Chatino medicinal plant use into Chinese modes of preparation and formulation, as well as my explanations regarding tongue diagnosis, were a form of information exchange in the field, without my introducing foreign concepts verbally. I hope this written work provides some compensation with regard to knowledge sharing. I might add that the Chatino were empowered, validated and delighted by just the knowledge that the Chinese and I, a foreigner, shared similar ideas of hot and cold, without going into excessive detail. The interest I demonstrated in medicinal plants also validated and supported their continued use, and Chatino cultural practices and beliefs.

Although my preference is to name all my informants, much personal and culturally sensitive material on topics related to illness and witchcraft was related in confidence. When I asked Justino, my main Chatino teacher (Chapter 2), if I could identify him, or if he preferred confidentiality, he grimaced at the mention of possible disclosure. Hence, Justino is a fictitious name, and most Chatino

speakers remain unidentified or are identified only by a real (or sometimes fictitious) initial (or initials).

Under ideal circumstances, I would circulate a draft of the dissertation in Spanish to my Chatino friends and colleagues. I will be able to solicit their input prior to the publication of parts of my dissertation in Spanish at a later date.

Protecting intellectual property rights of indigenous peoples is a paramount concern (e.g., Elisabetsky 1991, King 1991). I will do my best to safeguard the rights and interests of the Chatino, so that they may reap profits generated by any information obtained from this study.

#### **Collection of Plant Material and Identification**

Plant material used for medicinal purposes was collected in the field with Chatino informants. Periodically, excursions for the sole purpose of collection of medicinal plants were undertaken in the company of knowledgeable individuals. At other times, patients supplied individual plants, or accompanied me to a specific site in order to gather plant material known to them and mentioned in the course of the treatment interaction. Occasionally, en route to a destination, travel companions proffered information on medicinal plants. Data gathered included ethnobotanical information such as medicinal use, part of plant used, method of preparation, combinations with other plants, and common names, in addition to the usual label data (see Croom 1983). Information on medicinal plant use is included in the section on Chatino medicine, and in the appendices, by region.

I collected over 1000 vouchered specimens, including approximately one hundred fifty Zapotec (from the Sierra Juarez foothills and the central valley of

Oaxaca) specimens (not included in the dissertation as these areas are well-researched), some vegetative "ethnobotanical" specimens submitted to the UNAM Jardín Botánico ethnobotanical collection (with Dr. Robert Bye), and approximately 200 general collections. Multiple copies of fertile specimens were collected for submission to the University of Texas Plant Resources Center (TEX/LL), the National Herbarium at Universidad Nacional Autónoma de México (MEXU), the medicinal plant collection at Instituto Médico de Seguro Social (IMSS) in Mexico City, and for exchange.

I identified a portion of the specimens using keys and by comparing identified herbarium specimens. I am grateful to the following for expert voucher identification: Dr. Billie Lee Turner, Asteraceae, Fabaceae, Lamiaceae; Mark H. Mayfield; Justin K. Williams, Apocynaceae; Abisaf García, Agavaceae; Dr. Paul A. Fryxell, Malvaceae and Bombacaceae; Dr. Javier Fuertes, Malvaceae, Sterculiaceae; Dr. Shirley A. Graham, Lythraceae; Dr. Tom Daniel, Acanthaceae; D. H. Lorence, Rubiaceae; C. Todzia, Melastomataceae; F. Gonzalez, Aristolochiaceae; Andrew McDonald, Convolvulaceae; and to Dr. Tom Wendt, Dr. José Panero, Dr. Robert A. Bye, Salvador Aguilar, and Abisaf García for general identifications.

#### **METHODOLOGY: ANALYSIS**

##### **Comparative Medicine**

My approach to comparative medicine outlined above follows a methodology suggested by Browner et al. (1988) for incorporating biological symptomatology into cross-cultural ethnomedical analysis. While they compared

Western medicine to Mexican medicine, their methodology can readily be applied to a Chatino-Chinese comparison. My analysis follows their three step procedure. First, the Chatino folk syndromes were identified and a classification of illnesses constructed (e.g., Scrimshaw & Hurtado 1988) based upon the folk explanatory model (Chapter 3: Chatino medicine). Second, analogous diagnoses in Chinese terms were determined for the various symptoms associated with the Chatino folk syndromes (Chapter 6: Comparative Medicine). (Chapter 4: Chinese medicine provides an introduction to the diagnostic concepts of Chinese medicine discussed in Chapter 6.) Third, areas of convergence or divergence between the Chatino and Chinese diagnoses were identified (Chapter 6 "Comparison of Chatino and Chinese Medicine"). The classifications of illness, i.e., the folk syndromes or medical concepts, are the units of comparison. To a limited extent, comparison of individual patients on a case by case basis was also possible, and illustrative examples are included in the comparative discussion. My own Chinese medical perspective provides the basis for these case by case comparisons.

### **Medicinal Plant Use and Phytochemistry**

In order to examine correspondence between the traditional functions of the plants and plant chemistry, I employed cluster analysis using chemical data obtained from NAPRALERT (Natural Product Alert), the University of Illinois at Chicago ethnopharmacological database. NAPRALERT data was made available through the gracious generosity of Dr. Norman A. Farnsworth and a Sigma Xi Grant-In-Aid of Research. For this analysis I used one data set from the literature, Chinantec herbs for women's blood disorders (Browner 1985a, b), and compiled

an analogous list of Chinese plants for blood from Bensky and Gamble (1993). I chose this data set for analysis because Browner's (1985a, b) traditional functions for each plant were especially detailed and Ortiz de Montellano (Ortiz de Montellano and Browner 1985) provided an alternate approach to the plant chemistry. When I initiated this analysis my own collection was still largely unidentified, therefore practical considerations were also a deciding factor. A detailed discussion of the statistical methods employed is covered in Chapter 7: **Statistical Analysis of Medicinal Plant Traditional Functions and Chemistry**. Future work will entail the cross-cultural component of these analyses. My results should have predictive value for the analogous groups of Chinese medicinal plants.

#### **MEDICAL ANTHROPOLOGICAL TERMINOLOGY**

Quandaries, ambiguities, as well as full-fledged controversies surround certain terms in the medical anthropological literature, namely, disease vs. illness; the most appropriate term to use for Western, bio-, or allopathic medicine (this is not an exhaustive list); the ethno- prefix; and whether medicine, which in any society is pluralistic and heterogeneous, can be referred to as a medical system (see Chapter 5 for a brief discussion of the term "medical system.")

##### **Disease vs. Illness**

Disease, as defined by Fabrega (1974: 45) refers to "a biomedical condition or entity" with physical symptoms and signs. Illness, on the other hand, refers to "a sociocultural category" (Fabrega 1974: 3). This distinction, which became the accepted norm in the medical anthropological literature, appears to be

waning. For example, Kleinman (1980), once a major arbiter for the disease/illness distinction, now considers this distinction "less and less tenable" (Kleinman 1995: 9). Good (1994: 66 in Kleinman 1995: 242), in reference to Harvard medical students' acquisition of medical knowledge, claims that "biology is not external but very much within culture." Fabrega (1974:226) intimated that by coming to understand the native viewpoint of disease and illness we "would learn about the reciprocal influences that sociocultural factors have on bodily happenings."

For simplicity, I avoid the term "disease" and use "illness" throughout, as illness has traditionally had the broader meaning. However, if I wanted to make the point that disease and biology are not the proprietary domain of Western medicine, I might have done both Chatino and Chinese medicine justice by substituting the word disease for illness. Certainly, *bing* in Chinese and *enfermedad*, *kuitsa*, in Chatino medicine, are used to designate cultural categories with biological manifestations (cf. Etkin 1988a: 301). In fact, disease and illness as distinct terms are untranslatable in either culture. Interestingly, an antiquated meaning of *maldad* is illness (de Gámez N.D.: 365), implying that all illness was considered evil and possibly a product of sorcery. *Xie*, evil, in Chinese medicine, had a similar connotation (Unschuld 1985: 68).

### **Western, Bio-, Allopathic and Cosmopolitan Medicine**

Kleinman (1995: 25) favors the term "biomedicine," "because it emphasizes the established institutional structure of the dominant profession of medicine in the West, and today worldwide, while also conjuring the primacy of

its epistemological and ontological commitments." Western medicine is now increasingly being recognized as a cultural entity (e.g., Browner et al. 1988). Western diseases have historically been renamed and reconstituted (Fabrega 1974: 80) according to accruing knowledge and available technologies. According to Fabrega (1974: 44) "native medical categories and classification schemes are not ordinarily compared in a systematic fashion to similar phenomena that are classified by alternate frameworks," and when an external comparative framework has been applied, Western medicine has been the only framework considered. Fabrega (1974: 44) and Kleinman (1995: 25) are just two examples of the hegemony that Western medicine has had over biology and "disease." My own view is that biology is not the exclusive domain of Western science or medicine, and that Western medicine is as much cultural as it is biological. Hence, my current preference for "Western medicine" as a cultural designation, as delineated by James C. Faris:

It should be noted that the terms "West" and "Western" are used herein as special construct and disquisition, not geographical notion. They apply to a world that is usually European, European-American, and/or "white" (but not always, as sometimes today the Japanese [and Japan] are included in the West, as, of course, are non-Native American minorities located among the "white"). The West is usually capitalist (but not always, as the former USSR and its satellites could sometimes be [and today certainly are] included) and always institutionally and politically dominant. In other words, it is a locus of power and dominant discourse both within and without. It holds the camera. In this sense, "West" will always be capitalized [...] It is a set of assumptions, a way of doing things, a means of viewing" (Faris 1996: xiii).



"Allopathic" is a viable option, that Kleinman feels is not widely known (1995: 25). Merriam-Webster's Collegiate Dictionary (1996) doesn't include the term, which seems to bear out Kleinman's concern. According to Weil (1988: 17) the term, coined by Hahnemann, the father of homeopathy, is less than complimentary to Western medicine, as it denotes that Western medicine "prescribed drugs on the basis of no consistent or logical relationship to symptoms." Other terms interchangeably employed by Weil are "regular," "orthodox," "conventional," and "scientific" medicine (1988: 8).

Kleinman (1995: 25) calls biomedicine "a global institution." Some people apply the term "cosmopolitan" medicine, yet I would consider humoral medicine, if one can generalize regarding non-Western medicines, to be the truly cosmopolitan medicine, especially when one considers that only some 20% of the world's population has access to Western medicine. On the other hand, medical concepts of hot and cold are found in China, Southeast Asia, India, Africa, Latin American, the Phillipines, the Arab world, and Europe.

### **The Ethno- Prefix**

The ethno- prefix has fallen into disrepute in anthropology, as ethno- has been used to define a non-white, non-Western. "ethnic" "Other." Ethnobiologists and ethnobotanists still commonly use the ethno- prefix to describe the relationship between culture and biology, people and plants. The prefix can have two meanings (cf., the entry for "ethnobotany" in Merriam-Webster's Collegiate Dictionary 1996: 398), one which refers to the systematic study of people and whatever the ethno- precedes. In this meta-sense, ethno- does not refer to the

beliefs of the people themselves. The second meaning of ethno- is that of the natives' beliefs, with a certain redundancy, that reduces them to having an ethno- or lesser knowledge, such as "Chatino ethnomedicine" (cf. Hughes: 1996). I have therefore omitted use of the ethno- prefix as a designation for the beliefs of the "Other," and retain ethno- only in the meta-sense of the study of medical beliefs and practices (ethnomedicine), or people's relationship with and interaction with plants (ethnobotany). I sometimes refer to "traditional," "native," or "non-Western" medical concepts," to distinguish these from Western medical concepts, although I am now inclined to delete any prefatory adjective and use simply "medical concepts" to refer to whatever medical concepts are being discussed.

## **ORTHOGRAPHY**

### **Chatino Orthography**

Chatino is a nasal, tonal language, and has a glottal stop characteristic of many Mesoamerican and Amerindian languages. Chatino does not have a plural form for nouns. In accordance with the preferences of the Chatino teachers who are members of Centro de Investigación y Difusión Niatë Cha'tnio, I use the orthography outlined by Alfonso Merino Pérez (1991).

Basic consonants are: b, ch, f, j, k, l, m, n, ñ, nd, p, r, s, sh, t, ts, y. The apostrophe (') represents a glottal stop. The diacritical mark " (umlaut, diaeresis) above a vowel (ä, ë, ï, ö, ü) represents a nasalization of the vowel. Doubled vowels (aa, ee, ii, oo, uu) represent a long vowel sound, which may also be nasalized (ää, eë, iï, öö, üü). [Pride and Pride (1970: xi) employed a slightly

different orthography in which q replaces k, x replaces sh, and the nasal sound is underlined.]

For Tataltepec Chatino the Prides specified nine tones and glides (high, high and low, high and middle, low, low and high, middle, middle-high, middle-low, middle and low). Although in my field notes I occasionally noted tonal differences (high, low), a tonal convention has not been adopted by the Chatino teachers of **Niatë Cha'tnio**, and no tonal differences are noted here.

Chatino, written in boldfaced type, is of the Zenzontepec variant, unless otherwise specified. (**Niatë Cha'tnio**, which means "the Chatino people," is not Zenzontepec Chatino!) To date there is no published work on the Zenzontepec variant. Dr. Troi Carlton (San Francisco State University) is currently undertaking the first systematic study of the Zenzontepec variant. Alfonso Merino Pérez and Sebastian Pérez Pérez, both native speakers of the Zenzontepec variant, graciously reviewed some of my Chatino orthography. All errors are my own.

### **Chinese Orthography**

Chinese words are written using the *pinyin* phonetic alphabet. Consonants that differ significantly from English pronunciation are:

c like English ts in cats

q like English ch in chosen

x like English sy (sh with tongue flattened)

z like English dz or ds as in suds

zh like English j in jew

Vowels are a (ah), e (close to erh), i (ee), o (as in more), u (oo with most consonants, or like French tu with j, l, x). Combined vowels are ai (as in my), ao (as in ouch), ei (as in late), ua (wa as in what), ue (we like wet) ui (wee), uo (wo as in wombat), ou (as in oh), ia (ya), iao (yow), iu (yo like yo-yo). Ending in n or ng, some vowels are shortened, an (a as in parrot), ang (like wand), en and eng (like u as in under), ian (yan), ong (like New York awful), un (the u like wu as in would).

Simplified characters for Chinese words are included in Appendix B.

### **Typographical Notes**

As mentioned above, Chatino words are written in boldfaced type. Italics are used for all foreign non-Chatino words, i.e., Spanish, Chinese, and Latin binomials. (Some Spanish names, such as publishers' names, institutional names, and names of individuals, are not italicized.) Italics are also used to distinguish my questions from the responses. Translations of words or phrases are offered parenthetically, from Spanish to English or vice versa. Words added to the original speakers' translated texts to improve flow in English, often specifying pronouns, are bracketed.

**Figure 1.1: Map of the Chatino region. The municipal center of Zenzontepec is indicated by the upper left dark triangle. The municipal boundaries are shown. Tataltepec de Valdez is south (below) and slightly west of Zenzontepec. Adapted from Barabas and Bartolomé (1990).**



## Chapter 2: The Chatino and Study Site

"You're not going to like it," B. said. I insisted that he tell me the story anyway.

Two scientists were hungry so they climbed down the mountain to ask a woman for some food. She gave them beans and when they finished they asked, "How much do we owe you?" She said, "Five." "Five! That's a lot." She said, "Five for each." "That's a lot. Why so much? Are beans scarce?" they asked. "No," she said, "Beans are not scarce. People who come from the U.S. are scarce, so one has to charge." They paid ten pesos. Then they looked at the sky. "Is it going to rain?" they asked. She said, "What do you say? Is it going to rain or not? No, they said, it's the dry season, it's not going to rain. And you, what do you think?" "Yes, it's going to rain," she said. They left, got caught in a downpour and returned to her house soaking wet. "How did you know it was going to rain?" they asked. "Here even the burros are scientists," she said, "Because the burro is lying down with his feet up, that's how I know it's going to rain." "Very good," they said. "And just as you came soaking wet, I also know that one of you is going to get a fever," she said. They didn't believe her, and stayed the night. So it was that one of them got a fever. "How did you know that one of us would get a fever?" they said. "Because here even the chickens are scientists," she said, "When the chicken lies down with its neck up, they say its owner [or someone in the house] is going to get a fever."

### CHATINO LANGUAGE AND GEOGRAPHY

The Chatino of Zenzontepec call themselves *niatë tsa'jñä*. *Tsa'jñä* (*cha'tñö*, Yaitepec variant) means "words [that] work" (Greenberg 1989: 23) or

"useful words" (Bartolomé and Barabas 1982: 69) and *niatē* means "people." Chatino is estimated to have 25,000-30,000 speakers (Bartolomé and Barabas 1982: 9, Greenberg 1981: 25). This figure is probably low, due to reluctance on the part of bilingual speakers to be identified as "Indios (Indians)." The Chatino language branched from Zapotec (of the Macro Oto-Manguean superstock, Popolocan subgroup) and, of the Zapotec dialects, Chatino is closest to Míahuatlán which is also its nearest Zapotec neighbor (Greenberg 1989: 23). According to Hopkins (1977:19-26 in Bartolomé and Barabas 1982: 15), Chatino branched from Zapotec approximately 2400 years ago. Swadesh (1967: 95 in Bartolomé and Barabas 1982: 15-16) and Greenberg (1981: 23) estimate this branching occurred 1800 to 2400 years ago.

Greenberg lists three Chatino dialects: Yaitepec which includes Nopala, Tataltepec de Valdéz, and Zenzontepec. England and Bartholomew (1978 in Bartolomé and Barabas 1982: 69) recognized five language groups: Nopala (with two subgroups, a Quiahije sub-group, and a Yaitepec subgroup), Panixtlahuaca, Tataltepec de Valdéz, Zacatepec and Zenzontepec. Of these, only the Zenzontepec dialect is completely unintelligible to the others. (There is a mutual intelligibility of Nopala with Panixtlahuaca and Zacatepec of 66%, Nopala with Tataltepec of 33% and Nopala with Zenzontepec of 0%.)

The Chatino of Zenzontepec recognize four dialects: Yaitepec/Juquila, Nopala, Tataltepec de Valdéz and Zenzontepec. Interestingly, the Chatino of Zenzontepec consider all the Chatino dialects to be mutually unintelligible and are evidently unaware of the closeness and extent of mutual intelligibility of the other dialects. The linguistic isolation of the Chatino of Zenzontepec has social



consequences. The Chatino of the district of Juquila consider the Zenzontepec Chatino to be remote mountain folk and they are the subject of ridicule.

The Chatino region is located in the Sierra Sur of Oaxaca, in the districts of Juquila and Sola de Vega, with the majority of Chatino communities pertaining to the district of Juquila. The entire district of Juquila, consisting of eight municipalities, and roughly half of the municipality of Zenzontepec, are located east and south of the confluence of Río Atoyac (latitude 16°25') and Río Verde (longitude 98°12'). Two municipalities, Zenzontepec, the main study site for this study (Fig. 1.1), and Tlacotepec, pertain to the district of Sola de Vega, and extend north of Río Atoyac. Currently, the southern boundary of the Chatino area is just 50km inland from the Pacific coast (Greenberg 1981: 25). Bartolomé and Barabas (1982: 16-20) provide archaeological, linguistic, and historic evidence for a pre-colonial Chatino coastal presence, in addition to inhabiting the current montane inland areas.

The Chatino are one of fifteen Oaxacan indigenous groups (Barabas and Bartolomé 1990: 1) and they inhabit an integral and defined geographic range. They share boundaries with the Mixtec to the north and west and have ongoing territorial disputes on both fronts (Zenzontepec and Ixtlayutla). The relationship between Zenzontepec and Amoltepec (Mixtec) to the north is especially conflicted, with periodic skirmishes and ensuing deaths. (Older residents of Zenzontepec recall a time when people from the two communities frequently exchanged visits to sell local produce.) Zapotecs border the Chatino to the north (Sola de Vega), and east (Pochutla, Miahuatlan).

Municipalities vary considerably in area, number of communities and population size. The municipality of Zenzontepec has a relatively large area, 361km<sup>2</sup> (Nahmad et al. 1994: 110), with a population of between 11,500 and 12,000 (INEGI census data 1990) residing in twenty-three communities. [Nahmad et al. (1994: 112) believe the actual figure to be lower, closer to 6,000, due to emigration from the area whereas I would guess the actual figure to be higher than the census figure, due to under reported births. They cite twenty-one communities.] Due to its size and distinct dialect, for a single municipality, Zenzontepec is disproportionately influential as a Chatino cultural entity (A. Merino Pérez, pers. comm.).

Several excellent ethnographies on the Chatino are dedicated primarily to the region of Juquila and Yaitepec which is characterized by coffee plantations, a large mestizo population and considerable violence (Bartolomé and Barabas 1982, Cordero Avedaño de Durand 1986, Greenberg 1981, 1989, Hernández 1987, Upson 1958). Several works specifically address the violence prevalent in the Sierra Sur among the Chatino (Greenberg 1989) and among the Mixtec of Jamiltepec (Flanet 1989) that has resulted from the transition to a capitalist economy and changing land use (Greenberg 1981, 1989, Hernandez 1987).

#### **SANTA CRUZ ZENZONTEPEC**

Written work on Zenzontepec is extremely scarce. The only field study of Zenzontepec is an unpublished bachelor's thesis, by Ofelia Díaz López (1978) who worked as a nurse in Zenzontepec. A review chapter in Nahmad, González and Vásquez (1994: 110-125) is devoted to Zenzontepec, and mentions

specifically the communities of San Pedro del Río and El Carrizal. Data for these communities were obtained from the archive of the INI Indigenous Coordination Center (CCI) in Juquila (Nahmad et al. 1994: 124). One paragraph is dedicated to Zenzontepec's traditional medicine. [Zolla (1994, Vol 1: 105-123) has a chapter on Chatino medicine with information not identified by region. Most of the concepts described are not represented in Zenzontepec, although Zenzontepec healers participated in the INI project. See Chapter 3, on diversity in Chatino medicine, for further discussion of the INI findings.]

Zenzontepec, situated in the district of Sola de Vega, is predominately a dry tropical area with steep, eroded and unirrigated soils. Zenzontepec is also one of the poorest and most remote areas of the state of Oaxaca because of its difficult access. Zenzontepec is twelve hours' journey from Oaxaca de Juárez, including ten hours of unpaved road that is often impassable during the summer rains. Zenzontepec receives approximately 2000 mm of rainfall annually. Altitudes in Zenzontepec range from 350 m to 2000 m above sea level.

The residents practice typical Mesoamerican slash-and-burn subsistence agriculture and harvest a single annual maize crop. Their main products are maize, beans, and squash for subsistence, agave for fiber and hibiscus (calyces) for sale as a cash crop. Fruit trees and vegetables are grown in home gardens. Both wild and cultivated plants are relied on for food, construction, medicine, and as gifts for the saints. Chatino knowledge and use of plants in their environment and their self-reliance are remarkable.

Zenzontepec also shares a virgin pine forest with two neighboring municipalities that they are in the process of clearing for sale as lumber.

[Although the Zenzontepec-Tataltepec forest receives rain during the dry season, ecologists working for WWF/SERBO (Sociedad para el Estudio de Recursos Biológicos en Oaxaca), in Oaxaca, classify only two forests in the Sierra Sur, one in the Chatino area of Panixtlahauca, the other in the Zapotec Miahuatlan area, as cloud forests, earmarking them for conservation (L. Schibli, pers. comm.)]

Today the majority of land in Zenzontepec is still communal property.

The lack of good grazing land limits the amount of livestock. People tend horses, donkeys, cattle, goats, pigs, chicken and turkeys. Parrots are caught and sold in Oaxaca. Chatino men, and sometimes women, from Zenzontepec migrate periodically as seasonal laborers to work on the lemon and coffee plantations to obtain cash. Their own lands are too hot and arid for coffee cultivation. A day of work in surrounding villages in 1993-4 was worth Mexican NP\$5.00 to NP\$7.50 (around US\$2.00-\$2.50) plus a meal. Rates were higher in the municipal center: NP\$15.00 (US\$5.00) per day.

The majority of the houses in Zenzontepec consist of two rectangular structures each five meters long with walls made primarily of reed (*carrizo*, *Arundo donax*, Poaceae) and thatch grass roofs. House elements are fastened by lashing with vine. One structure is for sleeping and placement of the home altar and the other comprises the kitchen, with a built up hearth and a store bought hand grinder for the first pass of the lime prepared corn kernels into *masa*. (The *masa* must still be hand ground several times to be fine enough for a quality tortilla.) A metate, the grinding stone for tortillas, and a large comal (round, flat clay cooking surface) are on the hearth. A growing number of sleeping houses are of adobe with baked tile roofs. The sun-dried adobe bricks and baked tile are

produced locally. For the most part, reed and thatch are still preferred materials for the kitchen "because it's cooler."

Present day traditional costumes of the Chatino of Zenzontepec sewn locally make them readily distinguishable from Chatino of other regions. The young women wear bright polyester dresses, either solid colors or with small flowered patterns, adorned with wide strips of white lace (Fig. 2.1). Older women wear *enaguas* (skirts) and *blusas* (blouses) adorned with store bought white ribbon with red embroidery (Fig. 2.2) Women bind their waists with a *zoyate*, a woven belt made of *tule* (*Scirpus* sp.) leaves. The *zoyate* is bound again with a *ceñidor*, a long black sash. The women wear dangly costume earrings, and short bead necklaces. A few Chatino grandmothers wear a more traditional costume---a long wraparound cotton skirt and bead necklaces that adorn the bare breasts. This disappearing costume can still be seen among the Chatino in Tataltepec and in Jamiltepec, among the Mixtec. Women carry loads by tumpline across their foreheads (Fig. 2.3).

More traditional men of all ages wear a white cotton baggy *calzón* (trousers) and white or pastel *camisa* (shirt), with narrow pleats. Men wear only the *ceñidor*. Both the women's *enagua* and the *calzón* tie in back. Many young men have abandoned the *calzón*, preferring dark colored store-bought trousers. Men wear woolen *sombreros* year round. Men carry loads with the tumpline across their chests (Fig. 2.4).

The woman's costume is completed with a much prized black woven *rebozo*, purchased in Oaxaca. In church, one can gauge the affluence and status of a woman by the quality and density of the weave. Prices for *rebozos* vary

greatly, ranging from NP\$35 to 200 pesos (US\$10-70 dollars). The *rebozo* is a multi-functional garment, serving folded on head as a hat, shawl, pillow, blanket, baby carrier, and for carrying small purchases hidden from sight. Chatino women wear their infants in front of their bodies, near the hip (Fig. 2.5). In church and public places, especially when strange men are present, the *rebozo* is draped over the head, for humility and respect (Fig. 2.6).

Men's and women's roles are, for the most part, clearly defined. Men prepare the fields by the "slash and burn" method. Both men and woman sow the fields, four grains of corn and one bean seed per hole, and weed the newly planted fields during their first weeks of growth. Women prepare the food at home, and carry the food to the men in the field at noon. Women make pit-fired pottery (Fig. 2.7) and comals. Men construct houses, dragging the house poles from the *monte* by pack animal, preparing the adobe and tiles, and are the principal gatherers of firewood. Firewood symbolizes the male role during wedding ceremonies, when the groom presents firewood to his bride. Only men participate in the *asambleas*, the decision making community meetings held periodically in the *rancherías* and in the municipal center. Only men hold positions in the political and ritual cargo system. Husband and wife serve together as *fiesta mayordomos*, the wife organizing the women's activities, which consist primarily of the cooking and serving of food.

### ZENZONTEPEC HISTORY

The Chatino names for Zenzontepec are **Kehatii**, "ten hills," (Zenzontepec Chatino, Díaz López 1978: 5), and **Ka'ya Tsu'** (Tataletepec Chatino, Pride and

Pride 1970: 48) or **Ki'ya Tsu'** (Yaitepec Chatino, Greenberg 1981: 24), "side of the hill." Within the municipality, Zenzontepec is referred to simply as **Kitsë**, "the pueblo." Zenzontepec is a Nahuatl (Aztec) name that means four hundred hills (400, tepec=hill) (Díaz López 1978: 5).

Based upon oral histories, the original site of Zenzontepec, Kehatii, is believed to be located at the ruins near La Concha, a village in the municipality. La Concha is a fertile lowland site. During Spanish rule, Zenzontepec was moved to its current site, beyond the San Pedro river that rises and is passable only by a hanging foot bridge in winter. The municipal center is on a high mountain; water is scarce during the dry season (Oct-May). The current site was a less accessible, more defensible refuge, further from the center of Spanish control in Tututepec and Tataltepec. This oral history also accounts for the Christian elements in the legend of the cross relating the founding of the pueblo, the village of Zenzontepec.

The legend of the Santa Cruz relates how a wooden cross, representing the God of Water, was found by two men from Kuitiya who came to cut maguey. The two men told the priests that they had found a cross. The priests came to the place of the cross where they found God upon a rock that they named "Saint's Rock" (*La Piedra del Santo*). The men took the cross back to Kuitiya but the cross returned twice to its place. The priests then decided to divide the sanctuary and the village. When the Spanish king ordered the establishment of the village (and church), the Chatino built a small chapel to the cross that retains the name "The Old Church" (Díaz López 1978: 5). This small chapel is situated in Rancho Viejo, on the path above the large church that was later constructed in

Zenzontepec. The cross and the rock are both inside the Rancho Viejo chapel. In one version I heard, the Jews stole and buried the cross, which was later unearthed. May 3rd, the festival of the Santa Cruz, celebrates the unearthing of the buried cross.

The only church in the municipality is in Zenzontepec, and it has a resident priest of the Franciscan Order. The surrounding villages each have a capilla, or small chapel, where Sunday prayers are held.

### **ZENZONTEPEC IDENTITY**

Within the municipality of Zenzontepec I did not distinguish between data collected among primarily Spanish speaking communities and primarily Chatino speaking communities. The municipality as a whole is considered a Chatino municipality. Bilingual individuals resided in both types of communities, who had been raised in one or the other and relocated by marriage. Even "monolingual" individuals, who did not speak Chatino, sometimes understood Chatino perfectly, and vice versa, many Chatino were reluctant to speak Spanish yet understood Spanish quite well. I recall witnessing a lengthy transaction between two women, the one speaking only Spanish and the other replying in Chatino. Spanish speakers did attempt to distinguish themselves from the Chatino in various ways, while conserving many customs. For example, the Chatino ate coatimundi (*Nasua narica*, tejón), while Spanish speakers did not, and Chatino women sometimes made thicker smaller tortillas from colored corn (red, yellow, black—blue in North America), while Spanish speakers tended to prefer white corn and prided themselves on a finer grind and larger tortillas. However, I ate



finely ground large tortillas made by Chatino speakers (although I prefer the smaller thicker ones). The *temascal* (steam bath), was popular in some Spanish speaking communities and has fallen into disuse in some Chatino communities. Older men in Spanish speaking communities still wore a *calzón*, the traditional Chatino men's garb, the hallmark of a Chatino from Zenzontepec.

I did not attempt to address the question "Who is a Chatino?" in this work. Spanish and Chatino speakers mingle in every imaginable social situation, from the intimate to public, in municipal and local affairs, Sunday prayer attendance, fiestas, compadrazgo (godparent) relationships, and marriage and family ties. Some children of bilingual marriages were bilingual, others not. Derogatory remarks about the Chatino were as or more forthcoming, in my experience, from a person married to a Chatino speaker, than from others. Derogatory remarks were also plentiful regarding neighboring villages, regardless of language predominance, and regarding the Mixtec. Many Spanish speakers in Zenzontepec were actually relocated Mixtec and bilingual.

#### **BASIC SERVICES (TRANSPORTATION, ELECTRICITY, COMMUNICATIONS)**

The unpaved portion of the road from Oaxaca is impassable after heavy rains during the rainy season (May-October). Within the municipality of Zenzontepec, five villages lie along the road (one after Zenzontepec). The municipality includes the municipal center, and twenty-two surrounding villages (*rancherías*), seventeen of which are accessible by foot, or mule. Small planes run by Evangelist missionaries affiliated with the Summer Institute of Linguistics land at three strips within the municipality. (Service was suspended for a year

following the death of one of the pilots in a crash in the neighboring Mixtec municipality of Amoltepec.)

Zenzontepec, the village and municipal center, has electricity and a phone line that became operational in 1996. Zenzontepec also has a satellite dish for the telesecondary (televised junior high) school. One other village (El Portillo) also has a satellite dish, a telesecondary school and phone line. The three airstrips (El Carrizal, La Concha, Zenzontepec) are each equipped with radios and the operator in Oaxaca has a local phone number. Tlacotepec, an adjacent municipality, has a radio telephone service (calls are radioed to Oaxaca and connected via operator). In the last year, a phone (that services the elementary school regional supervision) has become operational in San Pedro.

### **Tío JUSTINO**

Tío Justino taught me most of what I know of Chatino beliefs and customs and often spoke of the elaborate funeral customs. Once he said that when he died I would see his cross painting ritual. He hoped that I would write something on Zenzontepec customs and beliefs, not only the medicine. He had a spinal tumor that paralyzed him from the waist down, so was always home and happy to have visitors. The tumor eventually paralyzed his face and one hand, but he may have died from a combination of cancer, malaria, diabetes (he was obese) and general weakness from intestinal parasites and a lung infection. Justino was a mature and accomplished member of Chatino society when he died at age forty-one. He had served as *regidor* (an important position in the municipal authority) and as *mayordomo* (patron of the village fiesta).

Justino had a wonderful sense of humor. Chatino humor is often sexual in nature, with both adults and children joining in the jovial banter. While degrading maize, Justino's daughters repeated "*chirimoya* (mayapple, *Annona* cf., *reticulata* var. *primigenia*, Annonaceae)," in the company of their parents, brothers and an old man, all laughing. The Chatino name for *chirimoya* is **yandjulua**, the fruit looks like a vagina, and **ua** means vagina in Chatino. On another occasion, Justino chided his son, "Don't sit so close to the fire, you'll burn your ass hair!"

Justino anticipated his death through dreams and omens, his own, and those of family and healers. He dreamed that the road he walked along ended. His wife dreamed that a stinking dead man threw down his petate (palm sleeping mat) and ran after her. I dreamed that Justino and his wife gave a huge feast at their wealthy home. All these dreams were considered to portend Justino's eventual death. Shortly before his death, Justino dreamed God told him when he finished the fences on his three circular chile fields He would take him. The day he died, Justino dreamed that the fence surrounding a large circular chile field was complete. (In real life chile fields are never round.)

Justino taught me the burial customs and wanted me to photograph him dressed up as a dead man, because the customs he was describing were so beautiful that he wanted me to see. The dead person is dressed in *mantaja*, a black or white shroud, black for a married person and white for an unmarried person, an *angelito*. Sometimes a wedding dress, complete with veil is worn, or a person's own clothes. The head, including the hair, of the deceased is washed with ground *yedra* (Convolvulaceae) seeds, fourteen for a man and thirteen for

woman, and the hair is combed. A man is washed by a man and a woman by a woman. A container is used to catch the water. The whole body is censed with copal smoke the night of the rosary and a cross painting is made (below).

Remaining clothes of the dead are burned. The dead reside in the land of the dead, near the Mixteca, in "a place where the water comes out dirty," colored by "the dead washing their *nixtamal* (corn cooked in lime) at night," near the source of Río San Pedro that courses through the municipality.

The dead are buried with the sand from the cross and many objects placed in a small *ixtle* (sisal) net bag "the size of two hands" for use in the afterlife: tiny tortillas, fourteen for a man and thirteen for a woman, a tiny embroidered napkin for wrapping tortillas (*servilleta*), a tiny drinking gourd (*bule*) with water stoppered with a tiny corn husk (*olote*), a tiny calabash bowl (*jícara*), chocolate beans, fourteen for a man and thirteen for a woman. In addition, a woman is buried with "everything she used in life" and some items no longer used, yet symbolic of a woman's role: a *malacate* (spindle), *porra de malacate*, cotton, needle and thread, a wooden comb, her earrings, and her hair ribbons (*soguillas*). A man is buried with his hat and replicas of his tools for planting. A rosary, *flor de paraíso* (flower of paradise, *Melia azederach*, Meliaceae), a small cross of *palma bendita* (from Palm Sunday palm) and a candle are placed in the folded hands of the deceased. Children ages two to fifteen are buried with a white rosary, an adult with a black one, "because he already has many sins." In some communities the face is covered with white handkerchief and in others is left exposed.

Justino came "ghosting" to me the night of his death. Justino often spoke to me of the belief that the spirit leaves the body several days before death or at the moment of death to depart from friends and family. He was the first to teach me about departing ghosts, was very adamant about their existence, and the many omens that he often saw (Chapter 3, "Aire from the dead"). After Justino, many others told me their ghost stories. Ghosts manifest by making loud crashing noises, breaking branches, whistling (the Chatino have a special soft "Hey you" calling whistle), or turning on a radio.

I was in Oaxaca when Justino died. I was fast asleep and heard a sudden loud crash that woke me in my room, as if something had fallen. I turned on the light, looked at my watch, it was 1:00 a.m. I thought to myself, "the Chatino say '*andan peinando*' (out ghosting), in the morning I'll see what it was." I didn't think much of it and fell right back to sleep. In the morning I completely forgot about the crash. That whole day, however, I felt an extreme sadness. I went to my post office box to pick up mail thinking I might get news of a death that would explain and justify the extreme sadness I felt. I even wrote that thought down on the envelope of the letter I picked up at the time. The following day I was fine, the extreme sadness gone. Two days later I found out that Justino had died that same night at 1:00 a.m. Even in death he continued to teach me Chatino beliefs.

In January 1994, I attended Tío Justino's cross painting, held on the ninth day of the wake (*novena*) (Fig. 2.8). Cross paintings are made of ground pure natural pigments, using dried bougainvillea flowers for purple, lime for white, carbon for black, dried hibiscus leaves for green, ground quartz for sparkle, red

clay, ground adobe, or roof tile for a reddish brown, and colored chalks for additional colors like orange and blue. Family members gather the pigment materials, dry fresh plant material, and grind the pigments on the *metate*. Two men worked for six hours to create the actual painting, by sifting the pigments through cardboard cut-out shapes onto a base of white chalk held in place by a frame of positioned branches. A night-long ceremony is held at the cross painting, during which rosaries are said. Exacting care is taken in the proper execution of the ceremony. During the night, the men in charge would pause to comment, "It's very delicate (*es muy delicado*)."<sup>1</sup> The spirit of the deceased is present at the ceremony. Towards morning, each person bows before the foot of the cross in turn, sprinkling holy water in the form of a cross from a white flower dipped in a cup of holy water, to pay homage to the deceased.

In the morning, the many colors of the cross are swept up into a *tenate* (a palm tortilla basket) with a corn husk, where they merge to the neutral color of sand, before being carried out in a procession and poured over the grave (Fig. 2.9). An older man remembered that in his childhood people danced on the cross painting until it was erased with the dust from the cross rising around their feet. The permanent cross is made of heartwood and engraved with the initials of the deceased. This cross stands at the head of the cross painting with an arc of flowers throughout the night, heads the procession, and is planted at the head of grave. Zenzontepec graves are usually simple dirt mounds covered with blankets or *petates* (straw sleeping mats) adorned with flowers and flowered arcs from Todos Santos.

## **ZENZONTEPEC SEASONS**

Events in Zenzontepec are tied to the seasons, the agricultural cycle and the fiesta calendar (Table 2.1). House building takes place when there is little agricultural work during the dry season after the maize harvest in December. House building, especially the traditional thatch house, is a party. Women prepare food and make tortillas in huge quantities, while each man comes carrying straw for thatch.

Trips to the coast or to Oaxaca to work for cash as day laborers in order to purchase essential items such as cloth, hats, machetes, and dishes, also follow seasonal patterns. Some people leave at the end of planting (end of August) to return for Todos Santos (Oct 30-Nov 1), while others leave after Todos Santos and return for Christmas. Some leave after Christmas. Families may rotate, so that when one returns another is free to leave. On the coast the Chatino work as coffee or lemon pickers on Mestizo plantations. In Oaxaca men work in construction and women work as washerwomen, often paid by the piece. Returning men can be seen carrying large bundles, of dishes or clothes, for their large families.

May 3rd is the principal fiesta of Santa Cruz. There is a year round schedule of fiestas in the each of the different villages. Zenzontepec has no central market, hence fiestas are major market days, with outside sellers setting up stalls to sell clothing, needles and thread, cheap watches. The Zenzontepec (municipal center) fiesta is the largest and has the greatest number of vendors. Chatino from other areas bring livestock and horses to sell. Visits by the priest to

the smaller villages on principal fiesta days are occasions for baptisms and first communions. The babies are dolled up in bonnets with lace, the young girls are dressed like brides, with lace veils and white dresses.

On April 1st and again on May 1st the saints are taken to the mountain tops to petition for rain. Planting begins in May and early June. On September 1st (and Jan 1st) people pilgrimage to the sacred cave on Cerro Neblina to make wishes. September 14th is another major fiesta in Zenzontepec. Sisal is harvested year round but can be spun more easily with water power during the rainy season.

August is *koo' jlyala, mes bravo*, the fierce month, time of the *canícula*, when nasty pests abound. September is called, *koo' kiee*, the month of flowers, when the mountains are a lush green, and the main flowering season begins. (Flowering peaks after the rains in early-mid November.) August and September are months of difficult access, hunger and dysentery, before the harvest, when food supplies have run low. The beans from last year's harvest are gone and the last of the rat-eaten corn is being used up. Government distributed corn meal helps people get through this difficult period. People remember times when during August-September they went from house to house to wash the stone metates (used for grinding corn) and heated a broth made from the crumbs of dough so obtained.



Table 2.1: The annual cycle in Zenzontepec.

Month	Seasonal Activity
January	Construction, Seasonal Work
February	Construction, Seasonal Work
March	Construction, Seasonal Work
April	First Prayers for Rain; Fields Burned for Planting
May	Rains Begin; Planting Begins
June	Planting Ends
July	
August	<i>Canícula</i>
September	"Month of Flowers"
October	End of Rains; Fresh Corn, Beans, Squash
November	Todos Santos, Flowering Peaks
December	Harvest of Mature (Dry) Maize & Beans for Storage

A major festival in all Mexico is Todos Santos (Nov 1-2). In preparation for the festival, major paths leading to and from the villages are cleared, for the expected passing of the dead ancestors who walk from the cemeteries to their former homes. All cemeteries are visited and offerings of flowers and food left for the dead. Graves and home altars constructed from reed are adorned with arcs of marigold flowers, *flor de muertos*. Todos Santos is the time of the initial harvest, when green beans, squash, fresh corn are all in abundance, in marked contrast to the hunger of the late summer months. The Chatino of Zenzontepec also gather three wild tubers (not collected---food is highly prized and collecting awkward) eaten during the festival, the food "our ancestors ate." Bread of the dead (*pan de muertos*) is baked in outdoor brick ovens heated with firewood. Hot cocoa (*chocolate*) is the festive holiday drink.

During the week following Todos Santos, people wearing masks that look like people dance and get drunk. In Zenzontepec proper, during the whole month of November, the *toro petate* (a straw mat shaped like a bull with a dancer inside) goes from house to house to chase out the lingering dead spirits. The *toro petate* and his party are greeted with food at each house.

### **TECHNOLOGIES FOR PROCESSING PLANTS**

The Chatino have many technologies for processing plants, three of which are outlined in some detail below. Photo essays for maguey and cane depict the different stages of processing. Corn to tortilla, coffee and cocoa from harvest to bean, each have their particular form of processing, not discussed here.

Quelites (edible wild greens) also have distinct methods of preparation and consumption. Some, like *papanoquelite* (*Porophyllum macrocephalum*, Asteraceae) are eaten fresh. Most are prepared in soups. Eggs can be fried with various flowers, or wrapped in leaves, such as the leaf of *yerba santa* (*Piper auritum*, Piperaceae) and baked on the comal (Fig. 2.10). One plant, *huichicate* (*Xanthosoma robustum*, Araceae), requires unusual skill in preparation in order to be edible. Only certain women know how to prepare the dish, called *cojo*. The veins must be removed from the leaf. Care must be taken that fingernails not puncture the veins during their removal, or the mouth will itch when the *cojo* is eaten. The shredded leaf is boiled with another herb, and rolled into a hot tortilla that is wadded up into a ball. *Cojo* is also a remedy for red dysentery.

Animal products also have their distinct methods of preparation and transformation. Cheese is made in a rabbit stomach. Large leaf cutter ant queens

are harvested and steamed in tamales wrapped in banana leaves. Armadillos are baked underneath the comal. Iguanas are dried on top of the comal.

### **Fiber Extraction (*Ixtle*)**

*Ixtle* (sisal) from maguey (*Agave angustifolia*, Agavaceae) is a principal product of the region. First, the spines are stripped from the large maguey leaves. Then the long leaves are baked in pits in the earth over coals to destroy the irritating property of the agave sap for further handling. The softened baked leaves are cut into strips by women using a bone tool made from a goat fibula, then arranged in bundles to ret (soak) for a week in a stream. Men wash the retted bundles in the stream. Retting rots the soft tissue which is then easily removed by washing and scraping. The remaining clean yellow fibers are dried and sold in bulk or spun for macrame. Spinning is done by rolling the fibers by hand against a piece of leather placed on the thigh, or by spinning on a small water wheel. The rope is then woven into hammocks, or net bags for carrying (Figs. 2.14-2.21).

Not long ago, *mezcal* was also a major product of the region. A small amount of *mezcal* is still produced locally. The maguey hearts are baked in a pit, then fermented and distilled to produce the alcoholic beverage.

### **Extraction of Sugar from Cane**

Cane is pushed through a wooden screw press driven by two bulls by two men facing each other on either side of the press. The juice is collected below, then strained, boiled in vats and poured into individual molds to get cakes of brown sugar (*panela*). Children drive the bulls (Figs. 2.22-2.25). Sugar cane planted along streams and primarily for local use, is abundant. People say that in

the past there was more cane, and that there is less water available now for growing cane as rainfall has declined.

### **Calabash bowls (*jícaras*)**

Calabashes, the fruits of *Crescentia cujete* (Bignoniaceae), are baked in pits, cut in half and the "tripa" (gut ) is scooped out. The calabashes are scraped thoroughly until clean. The scraping is done at home, and is a family activity in which all ages participate. The readied bowls are then boiled in lime water. A simple woven grass ring steadies the bowl on flat surfaces. Calabashes are used as eating and drinking bowls at home and on fiesta days, for serving coffee, stew and beans. They are used for bathing in streams and for washing clothes. The women once wore them as hats, and had them handy to receive small gifts of food when calling on neighbors.

### **CHATINO PLANT TOYS**

Portions of this section on Chatino plant toys and Chatino children's relationship to the plant world were presented at the Plants for Food and Medicine, Joint Meeting of the Society for Economic Botany and the International Society for Ethnopharmacology held in London, July 1-6 1996, under the title "Plants in a Child's World." This section further illustrates the cultural setting in which plants are used as medicine and it contributes to the ethnographic and ethnobotanical description of Zenzontepec.

#### **Introduction**

Chatino children of Zenzontepec are immersed in a world of plants. Drawings by Chatino children depict a very green world. For the Chatino, plants

are the primary toys and they play an important role in children's games and pretend play. Children also learn to gather plants for food and medicine, thereby contributing to the household economy and preparing them for adult life.

During my initial stay in the Chatino region in 1993 I was struck by the lack of manufactured toys. One of my first gifts during my field work was a plastic toy truck for a child. Only later, while inquiring about the medicinal uses of *Pedilanthus calcaratus*, a large tree in the Euphorbiaceae, I first began to learn about uses of plants as toys in children's play.

I distinguish between two main uses of plants in play: plants used in pretend play, make believe or "as if" play, and plants used as games or amusements in which the plant itself is the game (Table 2.2). Plants used in pretend play follow the two recognized types of pretend play: thematic plant toys used in thematic play and plants picked up and used spontaneously in spontaneous pretend play.

I further divide plant toys by the degree of elaboration involved. Adults fashion plant materials into toys for children, and so these adult -made toys seemed to warrant this additional distinction. Slingshots are unique in that children learn to perfect their making and use in childhood and then continue to use them as adults for hunting small birds for the cooking pot. Slingshots are made from *palo de leche*, *Stemmadenia* cf., *donnell-smithii* (Apocynaceae), that has the perfect branching angle and durability. A handle, the lower unbranched portion, about the diameter of a dime is selected. The branches are tied, and the *horqueta* (the branched fork) is placed in the fire to burn off the bark and dry the wood so that it is firm, before attaching the *resorte* (the leather or rubber strap). I

was not able to collect or identify all the plants with which I saw children playing, often because I did not want to take the child's toy away.

### **Plants Used in Pretend Play: Thematic and Spontaneous Play**

The cyathia of *Pedilanthus*, the flowers of many legumes, and other unusually shaped flowers such as *Aristolochia variifolia*, are called *gallinitas*, or *pollitos*, little chickens, with which the children play. The open flowers are the mother hens that guard their *pollitos*, their little chicks, which are the smaller unopened buds. Sometimes a *pollito* gets sick and dies. The children buy and sell their tiny *pollitos* to one another. The hens lay eggs. An occasional mother hen ends up in the pot.

Children play *tienda*, where they sell make believe *tomates*, a species of *Cardiospermum* (Sapindaceae), machetes from *Erythrina* flowers (Fabaceae) (called *pipi* or *la bocinita*), and *ropa*, clothes, or reams of cotton cloth, from the samaras of *Pithecoctenium echinatum* (Bignoniaceae). "We take out the seeds and say we are selling clothes."

Some adults are adept at making miniature animals from thatch grass. Thatch grass is fashioned patiently into squirrels, eagles and turkeys after a long day's work (Fig. 2.11).

I was particularly intrigued by the use of plants in pretend play, both as thematic toys or miniature objects, like the *gallinitas*, that suggest particular themes for play, and by the spontaneous play that children engage in with plants. According to play researchers (e.g., Fein 1981), younger children, beginning from about age 20 months, play more and longer with realistic toys and alone. Older

children improvise with less realistic materials and engage in more role playing and sociodramatic play.

Indeed, Hugo, who was two, played alone with "*pollitos*" of *Aristolochia* while Abelino, age seven, and David, age five, played and improvised with any plant. Giant leaves of *huichicate*, *Xanthosoma robusta* (Araceae), became a hat on David's head. Abelino served "food" on plates with inedible fruits he collected. Both gathered flowers to decorate the *gringo's* hat. Signs of spontaneous play with plants were evident long after unseen children had gone: pine needles in a cross on the ground, or sticks scattered in a somewhat deliberate array.

In a study on yard play in Rome by Musatti and Mayer (1993), Italian children engaged in spontaneous pretend play with plants. The yard situation is described as being in the "absence of objects to suggest themes for pretend play" or without toys. In contrast, the Chatino have developed thematic plant toys in addition to engaging in spontaneous play with plants.

Some of the Chatino thematic plant toys are notably toxic, e.g., *Pedilanthus* and *Aristolochia*. I should therefore point out that by the time children engage in pretend play, which usually begins at two years of age, they no longer ingest and suck objects indiscriminately.

#### **Plant games or amusements**

Some plants are themselves the game or amusement. The immature flowers of *tronadora*, *Tecoma stans*, are popped against the forehead. The Spanish name of the plant, *tronadora*, means noisemaker or popper. Fruits of

*bejuco de comezonudo* explode when heated in the fire. The stem of one forest shrub is cut and then thrown high into the air where it makes a great "zing." An eighteen month old baby contentedly held a fluffy ball of unknown plant origin stuck on a stick. A fern leaf pressed against the skin makes a beautiful washable spore tattoo much like the Mickey Mouse and Donald Duck tattoos popular among urban children (Fig. 2.12).

String games are universal (Schwartzman 1976), but specific string figures fit local culture and experience. A *calzón*, the baggy white trousers that Chatino men wear, is a typical Chatino string figure. Sisal string is produced locally from *Agave angustifolia*. Corn cobs are used like "Leggos" to build houses, "like castles." Tops made by adults for children, are wound with string and spun.

### **Play as a Prelude to a Adult Life**

From Musatti and Mayer's yard study (1993) we can surmise that probably most of us interact with nature as children. For most people in urban environments a conscious relationship with plants ends when yard play ceases. For the Chatino, a relationship with plants develops and matures, as dependence on plants becomes the basis for subsistence, medicine, ritual and ornamentation. Many plants used as toys have other uses. The latex of *Pedilanthus calcaratus*, the "little chickens," is used to remove warts. Young leaves of *tronadora*, *Tecoma stans*, are used medicinally for *latido*, a pulsing pain in the abdomen caused by missed meals or anger, and for fever. Children collect almond tasting stink bugs on *tronadora* to add to the salsa.



Children also contribute to the household economy. David, five years old, accompanies his older brother to bring maguey plantlets (*Agave angustifolia*) for planting. Children goad the oxen for the making of *panela* from sugar cane. They weed the cornfields and run small errands. Children gather wild edibles, thereby adding to the family's diet. Slingshots, mentioned earlier, are used by children and adults for hunting, mainly small birds.

When sick, Chatino children are literally covered with plants. Flowers of *Brugmansia candida* are rubbed over the body to treat *espanto*, magical fright. A child's back is scrubbed with fresh leaves of *Guazuma ulmifolia* (Sterculiaceae) to treat *espinosilla* or *kcha' kiche'*. Symptoms include lack of appetite, diarrhea, sadness, craving chile or salt. Tiny black *ahuates*, or spines, come out with the treatment. Poultices of fresh *Tecoma stans* (Bignoniaceae) leaves are applied to head, back, abdomen and feet to reduce fevers.

Table 2.2: Types of plant toys.

Type of play	Toys from plants used "as is"	Handcrafted toys
<b>Pretend play</b>	1. Thematic toys or miniatures e.g., <i>pollitos</i> , machetes 2. Spontaneous or improvised "toys" e.g., pine needles, sticks, "food"	1. Thematic toys e.g., grass animals 2. (Household objects e.g., calabash bowl)
<b>Games</b>	Plant is the game e.g., pop, whistle	Top String, cobs (household objects) Slingshot

## **PUBLIC HEALTH ISSUES IN SANTA CRUZ ZENZONTEPEC**

### **Introduction**

While conducting ethnomedical and ethnobotanical field research in the Chatino region of Santa Cruz Zenzontepec during 1993-1994, I encountered a number of public health problems. I found many cases of tuberculosis that were undiagnosed, untreated and under reported by the IMSS medical personnel operating health clinics in the area. I was the first to bring trachoma, also prevalent in the region, to the attention of the health authorities. As a result, I was asked by Dr. Ignacio Bernal Torres, director of INI (Instituto Nacional Indigenista) Oaxaca Department of Health and Traditional Medicine, to give a presentation to a conference of traditional healers in Oaxaca (1st State Inter-institutional Conference on Traditional Indigenous Medicine and Health, Villa de Etla, Etla, Oaxaca, Mexico, October 14-16, 1994). Portions of this paper were presented in this earlier context. Unpublished data collected by Buenaventura Ruíz Sánchez, a Zenzontepec teacher and herbalist, during his affiliation with CECIPROC, were generously made available to me, and are acknowledged where cited.

### **Malnutrition**

Malnutrition for the area is probably under reported. In one of the rural clinics where children are regularly weighed, I noticed the scale was about two kilos too high. In a study of levels of malnutrition in the municipality, Buenaventura Ruíz Sánchez found that only 5%, or two of thirty-eight children

were 98% and 100% well nourished. The remainder had different levels of first and second degree malnutrition.

Due to lack of potable water, plumbing, and malnutrition, the municipality has one of the highest infant mortality rates for the State of Oaxaca, 5 in 1000 (unpublished INI statistics provided by Dr. Ignacio Bernal Torres, INI, Oaxaca), although this figure is probably low due to under reporting of births and deaths before school age. The Chatino lack adequate grain storage facilities to minimize crop loss to rats and weevils, a contributing factor to malnutrition.

### **Sanitation**

In Zenzontepec, everyone now has an adequate, though simple, latrine. In contrast, in places such as Tataltepec de Valdéz, with much greater resources, large cement houses, electricity and television, a latrine is often absent. In Zenzontepec, the persistence of parasitic reinfection is not due to the lack of availability of latrines, but to their insufficient use. Open air fecalism has been reduced in Zenzontepec but has not disappeared completely. There are no latrines in the fields and along paths. Guests do not request to use a latrine as is customary in the city. In October 1994, health authorities began distributing ecological toilets (two years after distribution had been completed for the rest of the state). Most people wash their hands before eating but not after defecation.

Moreover, in Zenzontepec, everyone boils their water despite the tremendous cost of carrying and burning large quantities of firewood. The Chatino of Zenzontepec distinguish two types of water: "raw" water and boiled water, and ask for boiled water for drinking.

### **Lack of Medical Attention**

I estimate that the rural clinics are unstaffed for at least three months of the year. People often arrive on foot after six hours of walking carrying their sick child to find the resident student physician gone. They return home without receiving medical attention, moreover losing a day's work. The only medical attention available is at the local store where the attending person is untrained. The local storekeeper may prescribe an antibiotic for the flu, external bruises and scabies. Medical service provided by a licensed medical doctor is needed on a full time basis.

Sometimes, preventable deaths occur due to fearful reactions on the part of villagers. For example, instead of administering oral rehydration fluid in the case of cholera (sudden severe vomiting and diarrhea), people run away in fear of contagion (Ruíz Sánchez, pers. comm.).

### **Internal Parasites**

In a remote community like Zenzontepec, with few health and sanitation resources, the parasite problem is much more severe than in the city of Oaxaca or its surrounding villages. In a coproparasitoscopic study of fifty schoolchildren, Buenaventura Ruíz Sánchez found that forty-eight children (96%) had intestinal parasites. Data for the city of Oaxaca indicate that 50% of school children are infested with intestinal parasites and 75% in its surrounding villages (Navarro et al. 1994).

## **External Parasites**

The prevalence of some external parasites is related to the crowded living conditions while the persistence of others is due to the dwelling structure. Parasites related to overcrowding are scabies, which are seldom acknowledged due to the social stigma attached, and head lice. Scabies and head lice are practically impossible to eradicate when nine people, two adults and seven children sleep in two palm mats on lashed reed beds. The doctors often admonish and belittle their clients, telling them they are dirty, so people prefer not to seek treatment. People arriving at the clinic on foot after an arduous climb of many hours are sweaty and dusty, hence their momentary appearance may have nothing at all to do with their personal hygiene. If one takes the time to ask people who don't bathe regularly why they don't, one finds they have good reasons. The water is cold and an older person's pains increase with the cold. A mother with many children may find herself without the energy to bathe all of her children everyday. Sometimes it rains for many consecutive days.

Scabies resides in the skin but not in the *petate* (palm sleeping mat). Lice are more difficult to eliminate because they hide in clothing and bedding. Neither of these parasites can be killed by simply bathing. While lice and nits can be eradicated through frequent mechanical removal, scabies needs to be exterminated by applying an insecticide, of plant or chemical origin. In the case of lice, those remaining in the clothing and bedding must be killed as well. Lice and scabies pass equally well to a clean person as to dirty person. Doctors, as well as lay people, often miss this point.

Other parasites related to the dwelling structure are bedbugs (that cannot be exterminated except by building a new house), rat lice that reside in the thatch, and fleas found in the dirt floor. Moving or improving the house requires a large investment, in cash or labor, for a family based on a subsistence economy and compromised by malnutrition due to lack of good land, lack of economic resources and by disease from the very conditions in which they live.

### **Animals**

In Zenzontepec, due to a commendable public health effort, not a single adult pig runs loose. The lack of veterinary attention results in a high mortality and morbidity of livestock and fowl. This, in turn, affects the family nutrition. IMSS resident student physicians discourage allowing dogs in the houses in order to limit the spread of disease, but the dogs themselves are not treated for disease. This oversight results in the continuation of a source of scabies, worms and abundant fleas in the community. Dogs are fed tortillas next to the cooking fire, then beaten until they leave. Mistreated animals who become aggressive are a source of injury and bites.

### **Tuberculosis and Trachoma**

Tuberculosis, known locally as "cough," and trachoma, an eye disease that results in complete loss of vision, are two serious contagious diseases that appear to exist in epidemic proportions in this region. These diseases were so prevalent that when I was in Zenzontepec not a day went by when I was not asked about "cough" and "eyes," "eyes" and "cough."

## ***Tuberculosis***

Tuberculosis, "cough," is a contagious disease that kills slowly. First signs of tuberculosis are a dry cough that persists for over a month, weight loss, night sweats, and low grade fever in the afternoon. Advanced stages may include a blood tinged cough, hoarseness and waxy skin (Werner 1980: 179-180). The bacterium, *Mycobacterium tuberculosis*, persists in damp dark conditions with little ventilation (Berkow 1992: 131-134). The living conditions are ideal for tuberculosis contagion. Adobe houses are built with one tiny window or without windows allowing for little light or ventilation. The mud walls and dirt floor retain moisture. Roof tiles often leak or filter water. Moreover, the crowded quarters facilitate contagion. Continual inhalation of cooking smoke may cause chronic bronchial irritation and cough unrelated to TB or exacerbate a pre-existing illness such as TB.

TB is cured with a long (nine months to two years) treatment of different antibiotics (Werner 1980: 180). Individuals that visit the medical students at the rural clinics do not receive treatment for tuberculosis, nor the diagnosis of their disease. One medical student told me, "Here there is no TB." The medical students staffing the IMSS clinics do not recognize or treat TB. In cases in which the medical students suspect TB, instead of preparing a smear in the clinic, they send the phlegm sample to Oaxaca. The sample arrives in inadequate condition for proper analysis. Some medical students prescribe short intermittent antibiotic treatments of two weeks duration for TB, increasing the likelihood of developing resistant strains.

Once, or many times during many years, appealing to the rural clinic without finding a cure, the Chatino look for solutions within their own cultural context. One thin woman, speaking of her cough of many years told me, "I burn a candle for the saints and my cough subsides for a while, then I burn another one." She spends her money buying home remedies and vitamins or on sorcerers and herbalists. Although I have great respect for medicinal plants and use them in my own traditional medical practice, medicinal plants have their limitations. Plants can assist the body to recover strength, but cannot be expected to kill a tenacious bacterium such as TB. TB is best treated with "pills," the folk term for pharmaceuticals.

People often lack the resources to reach Oaxaca. Unaccompanied and with little facility in Spanish, they are also reluctant to go. Group trips to Oaxaca might diminish the problems of cost and the difficulty of arriving at an unknown place. Priorities are also an issue. If the Chatino understood the danger to themselves and their families and the ease with which TB can be cured, perhaps they would be motivated to go to Oaxaca for treatment.

### ***Trachoma***

Trachoma is a chronic conjunctivitis, called *mal de ojo* in Zenzontepec. First, follicles begin to form on the inner part of the eyelid that feel like a foreign body in the eye. The eyes are red, itching and painful with exudate, sometimes tearing a lot, for months or years. After a short time, the follicles disappear and scars remain beneath the eyelid that continue to scratch the cornea. As a result of



this continual scratching of the cornea, the eyes slowly lose their sight until the person is blinded (Werner 1980: 220).

Trachoma is also caused by a bacterium, *Chlamydia trachomatis*, and can be treated by extended use (4-6 weeks) of antibiotics, such as tetracycline (Berkow et al. 1992: 2372-2373). Unless treated soon after the initial infection, trachoma is difficult to cure and can easily be contracted anew. The scars do not disappear with treatment so the harm continues although the person is symptom free. The scars can only be removed surgically. According to Dr. Bernal, trachoma can be prevented by washing the face with soap and water at least five times a week.

As in the case of TB, the medical students in the rural clinics do not recognize the presence of this disease and do not treat it. As of December 1994, the time of my departure from Oaxaca, the presence of trachoma in Zenzontepec had not been confirmed by laboratory analysis. Trachoma is the probable diagnosis based on the clinical presentation.

### **Local Violence and Corruption**

The Chatino area is rife with conflict. Jealousy and envy are the cause of sorcery. Suspected sorcerers accused of inflicting disease or causing death are occasionally murdered. People are killed for robbery, jealousy over women, or revenge. Historic tension and distrust between the indigenous people and the state persist. The Chatino are at war with the neighboring Mixtecs of Amoltepec. Fourteen people were killed in one 1994 skirmish with Amoltepec. Some communities and even some families are split between Evangelists and Catholics.

Adultery with malicious gossip infuriates spouses. (For example, the wife has an affair but spreads rumors that her husband is sleeping with the wife of her lover.)

Incest, rape, domestic violence, alcohol and marijuana abuse are common.

Community violence can also be seen as an extension of domestic violence.

Local corruption is common in Mexico and undermines community and development efforts. In January 1993, seven armed masked bandits robbed the Zenzontepec municipality of the government loan repayments that had been collected from the community. The armed robbery was an inside job and by 1994 the seven had been identified. One of the robbers served as *Presidente Municipal*, the highest local political office, for two years immediately following the robbery. The current Presidente was also among the robbers, although he is more amenable to indigenous issues than his predecessor.

As another example of local corruption, the Chatino of Zenzontepec are logging the virgin forest they share with two other municipalities. The community is divided, with the majority opposed to the logging while those in favor control the committee in charge of logging and pocket the proceeds.

### **Traumatic Injury and Epilepsy**

High rates of injury, infections, and perinatal problems are typical of poor rural areas. These factors, combined with limited treatment and poor sanitation, contribute to a high incidence of epilepsy, which may account for at least some of the preoccupation with "*aire*." The incidence of epilepsy, 4-8 cases per 1000, in Western countries, is three to five times higher in low income societies (Kleinman 1995: 147).

## CHATINO WORLDVIEW AND THE BODY

I conclude my introduction to the Chatino with the Chatino worldview, as a prelude and transition to the next chapter on Chatino medicine. The Chatino perceive and experience nature as magical and alive. The Chatino view of nature extends to concepts of the body and illness. My field note entry for May 11, 1993 reads: "The natural vs. the supernatural. The "natural" world is not natural, i.e., biological in a Western sense, but *monte* in a wild supernatural sense, where *nungyati* (*chaneques*, spirit guardians of places) reside. Sun, fire, [and] thunder gods need to be appeased, as well as wandering spirits who reside in the *monte* so that *milpa* (fields) can be cleared." Several authors have called attention to nature (*monte*, wilderness) that contrasts with culture (*milpa*, cultivated) in the Mesoamerican worldview (e.g., Alcorn 1984: 85-87, Greenberg 1981: 93, Katz 1991). Greenberg (1981: 84) described the aliveness of nature in the Chatino worldview: "Thus, the mountaintop which is said to be the 'house' of the rain god is also said to *be* the rain god. As 'place' comes to be equated with 'being,' nature comes alive in a sense that Westerners reserve for animals and human beings only." At Piedra de la Ñola (Fig. 2.13), a large mountaintop rock, offerings of copal, flowers and lemon leaves, representing money, are left for the rain god (*jo'o ti'yu* in Yaitepec Chatino, Greenberg 1981: 84), who is *jo'o kuitiyi'yu*, god of lightning (*diós del rayo*).

Caves are entrances to the underworld. Near the top of Cerro Neblina, the highest peak in Zenzontepec, is a cave that is considered by many Chatino (not from Zenzontepec) to be the entrance to the underworld (Bartolomé and Barabas

1982: 125). Inside the cave is a large stalagmite named St. John (the Baptist) because he is constantly bathed in water. Offerings of candles and flowers are left at the foot of St. John, who stands next to a small pool of water. The Chatino petition for crops, livestock, children, houses and children by making carbon drawings on the cave walls. One large flat rock is reputed to bring fertility to anyone who lies down on it. In Zenzontepec, the dead are believed to reside in a cave in the Mixteca, and to continue their normal activities there. Another, longer version of the cave of the dead story in the first section of the following account that was related to me, appears in Bartolomé and Barabas (1982: 126).

The soul probably [remains] nearby and doesn't feel naked but normal, dressed as usual, because when we see the dead in dreams they appear exactly as they were in life. [1.] The cave in the Mixteca where the dead [used to] go is now closed, but one man went and saw his wife living there with another, with some animal, and got angry and burned her house down. The woman said, "What you are doing is not good, because you are burning our house, and when he returned to the place where he lived he saw his house had burned down. Five or six years ago, not long ago, a man saw his wife in the cave and asked him where she hid the money and she told him, but [the cave] is closed [now]... [2.] A man, a merchant, went along a road with his mules to sell and saw a thief hanging in a tree, dead, someone had killed him. When he saw [the dead thief], he spoke ill of him, "How nice that I see you like this," he said. That night he slept, and when he woke up he saw that his mules were gone; someone had taken them. He spoke to "someone who knows" [i.e., a diviner] and asked him if anyone had passed by on the road. He said yes, the one who was hanging. He said [the dead thief] was the one who had stolen [the mules] because [the merchant] had spoken ill of him. So [the merchant] went to leave candles, to pray there [on the road], and later he found his mules

high on a cliff, where mules can't pass, and can't come down. [3.] One man from [a certain village], when he died, his family didn't care and didn't bury him with all that he needed to bring [with him], his water gourd, his net bag, his tortilla and so on. It bothered [the dead man] a lot, and he came [to haunt them] a lot, and didn't leave them alone until they went and buried these things in the graveyard. The things [i.e., funerary objects] are for the journey. They say the cocoa beans are the money [the dead] use. My grandmother always said not to give moldy [lit. hairy, *con pelo*] tortilla to a dog, because otherwise [the dog] will not let you pass the river, and will leave you there [stranded], for the river to take you. When [healers] pray, they invoke someone, God or some saints, they touch the earth, they blow and then they take the pulse. They say when one has a fright, there the soul remains, in the place of the fright.

Chatino belief in the *tona* (*tonalli* in Nahuatl), that we can consider in the context of a magical Nature, is common in Mesoamerica. The *tona* is an animal companion spirit whose life mirrors the life of the person with whom it is allied. If the *tona* is harmed, then the person will manifest illness in the same bodily location in which the *tona* was injured. When one's *tona* dies, one also dies. Chatino deities, such as the sun, moon, and lightening, also have *tonas* (Greenberg 1981: 93) associated with them. Belief in *chaneques*, spirit guardians of places that need to be appeased to prevent harm to oneself and one's crops, is yet another example of a magical Nature.

These beliefs indicate the interconnectedness of man and nature. If the natural world, on which subsistence and life itself depend, is not respected and appeased, then its vengeful spirits will inflict mischief. If the natural world is harmed, especially the *monte*, the wild places, where the *tona* and *chaneques*

(Chaper 3) reside, humans will suffer. If the natural world dies, then the soul and body of man will also die.

The body is not only corporeal and material but also permeable and air-like. The body can be penetrated by evil *aire*, and by the insertion of objects, like spines, stones and bits of glass, sent by witches. Herbs applied externally affect the body internally. Evil thoughts of witches can enter the body via dreams, or a witch's *nagual* (evil *tona*) can attack a person to cause illness (Greenberg 1981: 92).

Every person, house, village, god, saint, and place has a soul, or "heart" (Greenberg 1981: 84) The soul leaves the body while dreaming and before death. After death, the soul persists to visit relatives yearly on Todos Santos. The soul can be captured by spirits of places, and such capture, called fright (*espanto*), causes illness. Prayers and offerings can entice the *chaneques* to release the soul. Prayer can affect healing of another at a distance, change the actions and intentions of one's enemies, and cause rain to fall. The soul is free to consult with the souls of ancestors through the use of seeds of *Turbina corymbosa* (Convolvulaceae), a psychedelic plant.

A candle's flame represents the soul (Greenberg 1981:88). Candles are burned during curing rituals, and the way the flame burns, straight and tall or sputtering and small, is prognostic. "The candle flame is important. If it flickers, the life of the patient is in doubt. If it, burns high, he will have a long life. The flame represents the soul."

There are seven *madrinas* (godmothers) of a baptism, each with a *cirilio* (a large two foot candle, from *cirio*, a long wax candle). One burns a little

each time the child is sick, and they get well! One also offers prayers and burns an Easter *cirilio* when someone is sick. When my father's godson was killed [my father] lent *cirilios* for the funeral service (*velorio*), to show that he was pained, that he felt [aggrieved by] the death of his godson. There is still this much [about six inches] left (from fieldnotes).

Beliefs regarding the body are manifested in attitudes towards acupuncture, which ranged from fear and distrust to delight. The Chatino believe that a needle can enter the vein and flow to the heart, so this was a concern, as well as a rationale some people gave for how acupuncture worked. One woman healer and sucker of objects (*chupadora*) accused me of having an invisible machine that drained blood from my victims. She remained steadfast in her belief even though I showed her that the needle was not hollow. One enthusiast said of acupuncture, "*es muy chingón*," which translates roughly as "fucking fantastic."

Not all people, or bodies, are real. Real people eat salt. "There are people that aren't people." Strangers that pass through the municipality and who are seen once and never seen again are not real people. These strangers are bad omens, that portend poor crops and drought. Women are especially bad signs. Justino asked me, "What color is your blood?" The year I came there was a drought. In 1979, one woman who "was Scabies (*La Sarna*)," brought scabies and poor crops:

An unknown woman, a woman that looks like a person but isn't a person, came and she was Illness (*La Enfermedad*). She brought scabies. She stayed in a few houses, one up above, where scabies struck everyone. She didn't have scabies, she didn't comb [her hair] and didn't eat salt, she ate only tortillas. D. wanted to give her five thousand [pesos]. She threw the money on the ground and said "I don't need money." This is how they

come sometimes, to announce that there isn't going to be maize, that it's not going to rain. God is angry because they make the tortilla with plastic [bags]. Before, they made [tortillas] only with hands. He is angry because maize is sold for a high price, and he gives the rain, free he gives [the rain]. F. advised [us] that a *señor*, a man, came to Tlacotepec. It's worse when a woman [comes].... [La Sarna] said there would be much illness and that year there was no maize. A white man by Tlacotepec was clearing milpa with a machete and said "Over there my sister goes." F. went to work in Agua Ceniza, and there [the man] spoke these words to him, this man was in Cunihina, and F. said maybe you were the woman the man was referring to. [F.] said you spoke very beautifully when you gave him the twenty thousand, "This is for your work," [you said,] and indeed afterwards he had a lot of work. They said you had this much money [bills piled eight inches thick], and afterwards [F.] began to earn a lot of money. People have many beliefs (from fieldnotes).

"The Legend of the Sun and Moon (La Historia de Sol y Luna)," narrated by H. Mendoza Velasco and published in Bartolomé and Barabas (1991:3-5), contains the main elements of the Chatino world view, essential also to an understanding of Chatino medicine. These elements include the central dualism, represented by the sun and moon, the analogous association of the sun and fire, evil *aire*, envy, distrust, deceit (*engaño*), and fright. Men and women's roles are reflected by the woman, her husband and sons. As mentioned earlier, Chatino men typically work the fields, and the women bring lunch to their husbands in the field. Men hunt game, and women cook tortillas, beans, and whatever meat the man provides. Ambivalence in relationships is expressed by the woman who picks tender greens for her husband, then beats him in rage, and the sons who kill both their parents in repayment for kindness. The theme of betrayal for kindness



is echoed in the brief coyote tale that opens Chapter 3: Chatino Medicine. The Chinantec and Cuicatec, two other Oaxacan indigenous groups, relate variations of this myth (Weitlaner 1977: 49-62). (Translated here from the Spanish.)

Once, Sun and Moon were [ordinary] people who walked the earth. One day they encountered Evil Air who began to chase them. Evil Air was their enemy, who didn't want Sun or Moon to exist because he was envious of them. Sun and Moon escaped and hid under the waters of a river. When the river dried up and the pair were almost revealed, an old woman came looking for water. The children [Sun and Moon] asked her to save them from Evil Air. The old woman hid them in her mouth, one in each cheek, and her head became round like a ball. On the way home she encountered Evil Air who asked her why her head was so round. The old woman replied that she had a toothache and her face was swollen, thereby deceiving Evil Air. The old woman brought the children home, and raised them as if they were her own. The children were mischievous, playing all day and getting into trouble. The old woman spun cotton thread on her spindle, but could never finish her work, because as soon as she left her house, the children unwound the thread. So time passed and the children believed the old woman was their mother. When the brothers got older they began to hunt and made bows and arrows with which they caught doves they brought the old woman to cook up for them. When the old woman left the house, they asked where she went, and she told them she went to see their father. The brothers did not know their father, and were curious to meet him. One day they asked the old woman: "Mama, who is our father? We want to meet him." But the old woman answered, "I go very far in order to see your father, but I don't want you to meet him because you could kill him." One day the brothers decided to follow her. They left a trail of leaves and ashes so they would not lose the way. When the old woman reached a place in the forest, the children saw her gesturing and calling strangely, and soon a great deer appeared to whom she gave

the food she brought with her. The deer was the woman's husband. After seeing that, the brothers returned home. The next day the old woman asked them to chop grass for her to bring to her husband who, she said, ate only plants. The brothers went out to make a wooden spade with which to cut grass. They cut the grass with such force that a rabbit was startled and jumped into the face of Moon with such a blow that the image of the rabbit was left on the face of Moon. For that reason, to this day, Moon has a rabbit engraved on its face. The next day the brothers decided to spy on their father and followed the trail of ashes and leaves they had left. When they reached the place where their mother had called the deer, they imitated her gestures and a great deer appeared. When they saw him the twins said, "This can't be our father. He is very ugly, look how thin his thighs are, his thighs look like reeds. Better to kill him." When the deer got closer, Sun shot an arrow killing him. They cut up the meat, opened up the body and removed the heart, liver and intestines. They roasted the viscera and ate everything except the liver, which they kept to give to their mother. Before returning home they filled the hide with wasps, arranging the hide so that it would look like the deer was resting there. Returning home, they gave the old woman the liver, who was very content to have such a good thing to eat. Just as the woman was about to bite into the liver, it started to shout and the woman looked ill. While the woman was eating, the frog began to sing, "You are eating the meat of your husband!" Three times the frog sang thus. "Could what the frog says be true? Did you kill my husband?" the old woman asked the Sun and Moon. "No Mama, the frog likes to gossip, don't pay any attention," they replied. But the woman didn't trust them, and went to look for her husband. Before leaving, she gathered fresh greens for her husband to eat. While she was walking, she met the crab who told her her husband was dead, but the old woman didn't believe him and stepped with such force that she flattened him, which is why the crab is flat. Then the dove cried, "He's lying there, on the earth." The old woman thanked the dove because she believed her

husband was lying on the ground, but only the hide was propped up with stakes. When she saw her husband, she flew into a rage, because she thought he was resting instead of working. She broke a pole and began to beat the deer while chastizing him. While she was hitting him, the wasps began to emerge from a hole in the hide and stung the old woman furiously. The woman's whole body was covered with wasp stings. The old woman ran away screaming in pain, and as she ran a rabbit said, "Leap into the water, leap into the water," but the old woman didn't respond. "That's of no use. Better I go home so my sons can bathe me in a temazcal (steam bath)." At home, her sons made a temazcal for her, with a lot of wood and medicinal herbs to cure the old woman. The temazcal was so hot the old woman sweated a lot, so much so that she began to burn and asked to be let out. But her sons said, "Here you will stay, Saint Grandmother, and from now on you will eat what your sons who will be born give you. If they don't feed you, the children will die. All will come to you to have strength. For that reason, when a child is born, there is a ceremony, and one bathes the newborn in the temazcal, with copal and candles, and one speaks to Saint Grandson so that he will eat. One puts chickens, tamales, tortillas, so that Saint Grandmother will stop evil from reaching the child. One prays to Saint Fire because it is like the Sun. After the old woman was reduced to ashes, Sun and Moon went to the woods, but their heart was sad. They thought about their mother who was left in the darkness and how they could illuminate their mother so she wouldn't be in darkness. They decided to go up to the sky and bring light to the day and night, to bring light to their mother's life. They walked to the highest mountain, Sun carrying a stick and Moon carrying a skein of his mothers' cotton thread. As they were walking, a huge snake appeared with shining eyes. They wanted his eyes, so they thought of a way to get them from the snake. They strangled him with the thread and beat him with the stick until he died, and they were left with his eyes. Moon took the right eye that was brightest and Sun the left, that was much less bright.

They continued walking with their shining eyes, when Moon used his thread to get down a wasps nest, drank all the honey and sat down. Sun stuck his stick in the ground and springs of water sprang from there, which Sun drank. Moon was very thirsty and asked for a little water, but Sun told him that he would give him water only if they swapped eyes. Moon agreed because he was very thirsty, and so it is that Sun was left with the brighter eye, which is why his light is much brighter than the Moon's. They went up to the top of a mountain and there Sun threw the skein up with such force that it reached the sky and the end of the thread was in the brothers' hands. Moon wanted to go up first, but Sun said better he go first because his eye was brighter and he could light the way better. Moon didn't like the arrangement, but let him have his way, and the two went up to the sky, one ahead of the other, and that's how they go around the sky lighting their mother's grave.



Figure 2.1: Girls wearing modern “traditional” Zenzontepec costume.

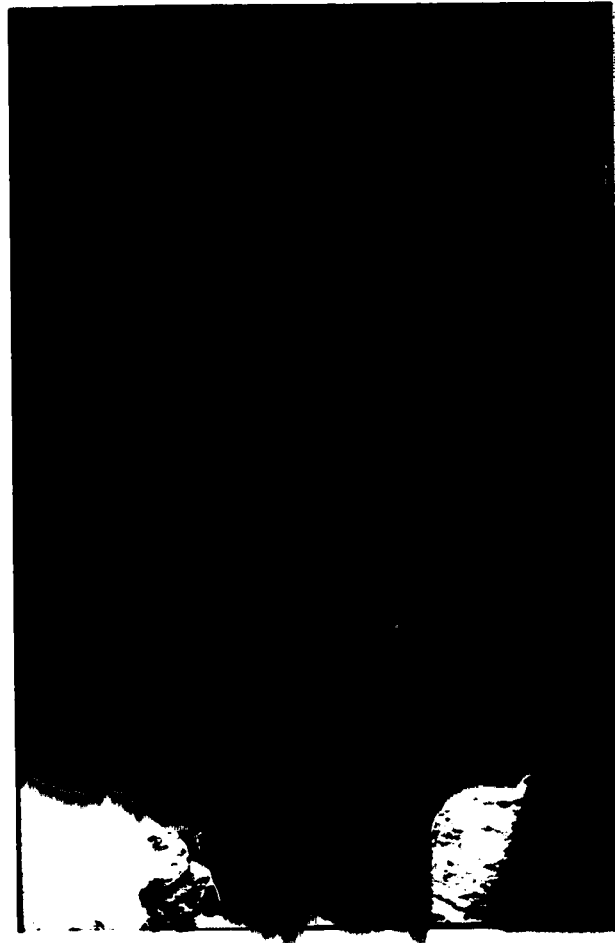


Figure 2.2: Traditional *blusa* and *enagua* (skirt). Woman gathers stones for making lime.

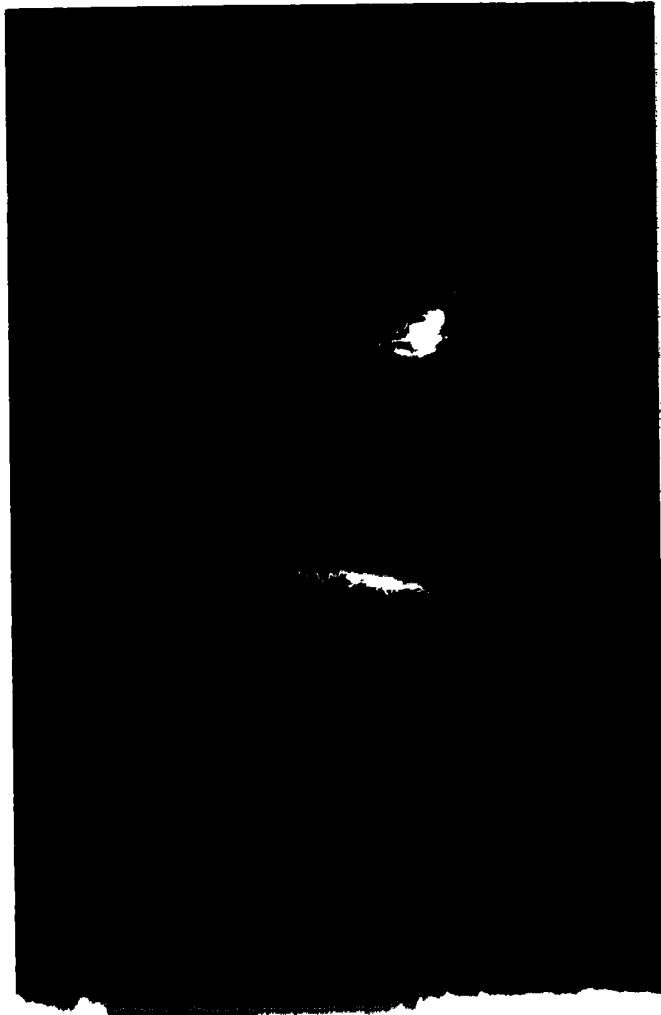


Figure 2.3: Young woman carrying water gourd with tumpine.



Figure 2.4: Men carrying loads.





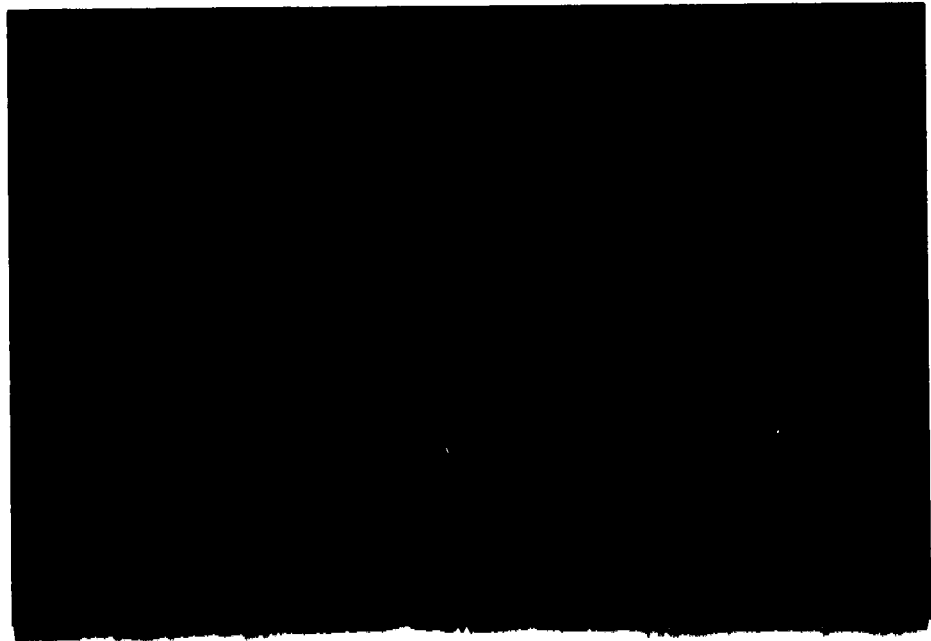
Figure 2.5: Chatino family. Grandfather, daughter-in-law, and three children in front of sleeping hut. The *rebozo* is used as an infant carrier.



Figure 2.6: *Rebozos* worn in church.



**Figure 2.7: Pottery making. The sides are extended by rolling a corn husk (above), then smoothed with a river stone or mamey seed.**



**Figure 2.8: Cross painting.**



**Figure 2.9:** Swept cross painting and permanent cross ready for procession to cemetery.



Figure 2.10: Egg baked on comal wrapped in *yerba santa* (*Piper auritum*, Piperaceae).

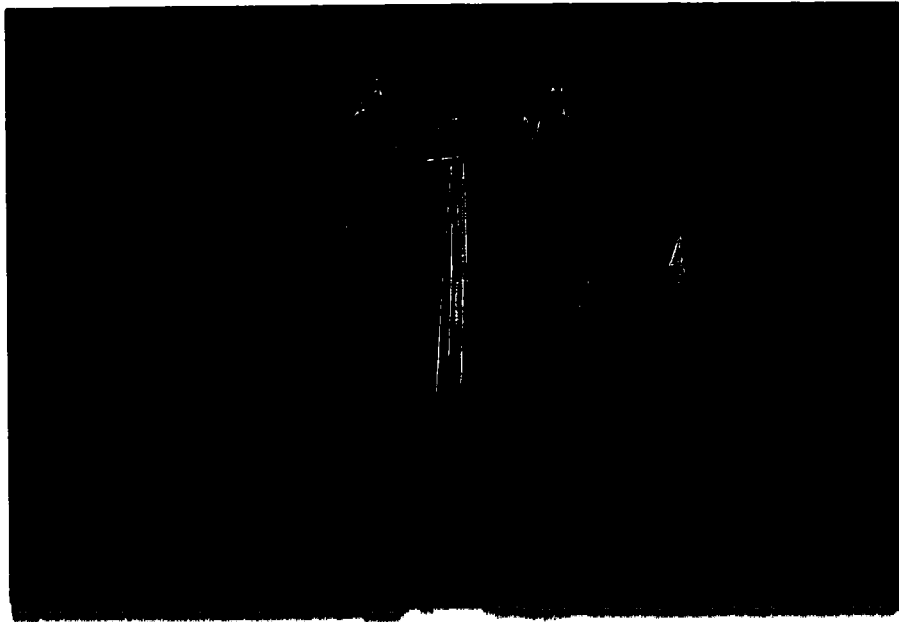


Figure 2.11: Chatino thatch grass toys

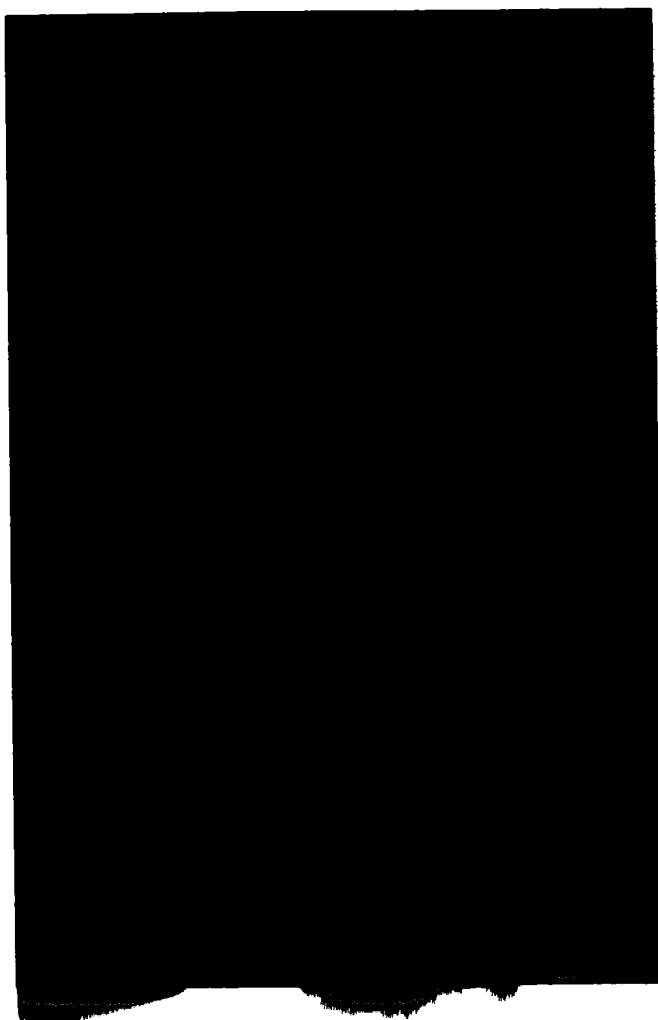


Figure 2.12: Fern "tattoo."



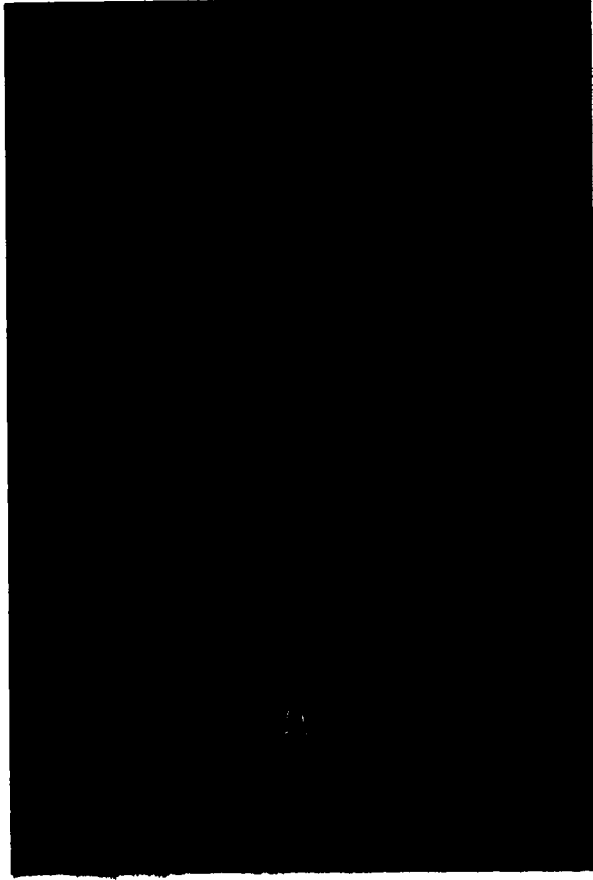
**Figure 2.13: Piedra de la Ñola. Man at foot of rock shows scale.**



**Figure 2.14 :** Bringing young maguey plants for planting.

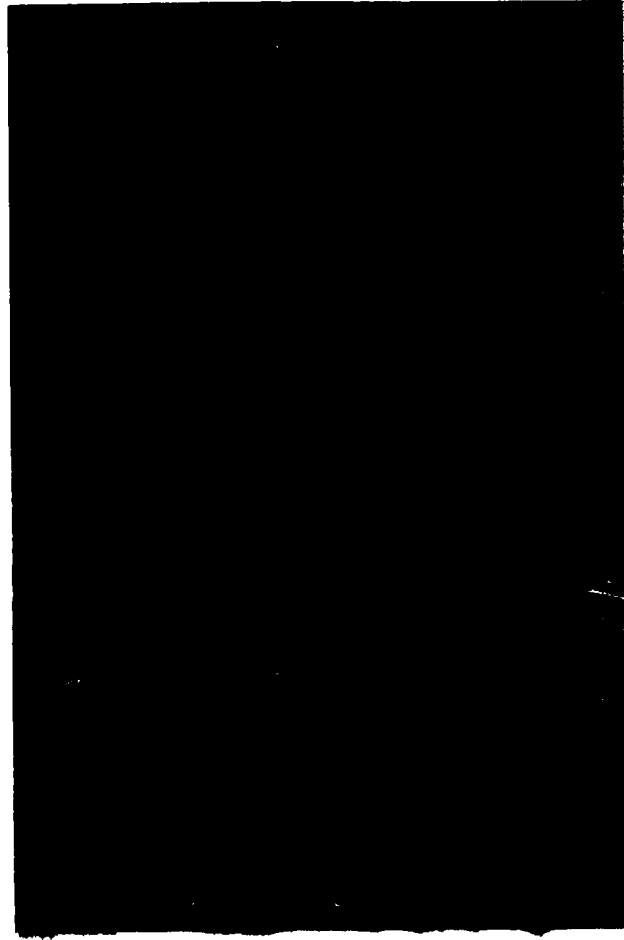


**Figure 2.15:** *Agave angustifolia* plants with lower leaf bases cut.



**Figure 2.16: Stripping maguey leaves for retting.**

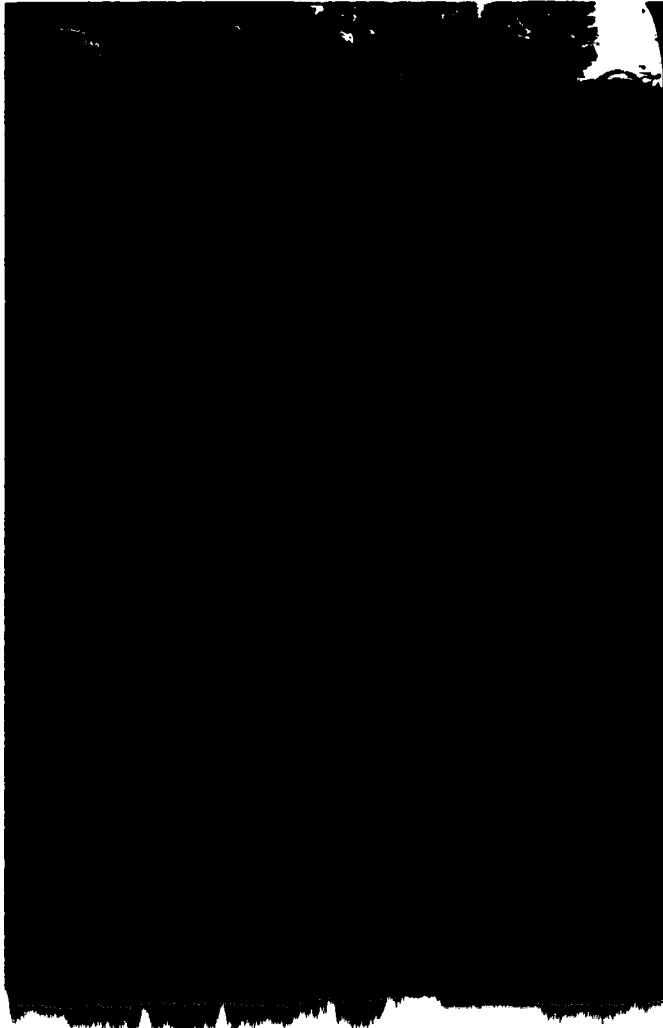




**Figure 2.17: Maguay leaf bundles retting in stream.**



**Figure 2.18: Washing maguery fibers in stream. The water trough is a banana trunk. Washed fibers are on rock in background.**



**Figure 2.19:** Man on right spins *ixtle* to rope. Two others hand him small *ixtle* fiber bundles.



**Figure 2.20:** The rope is tightened by twirling with a paddle.

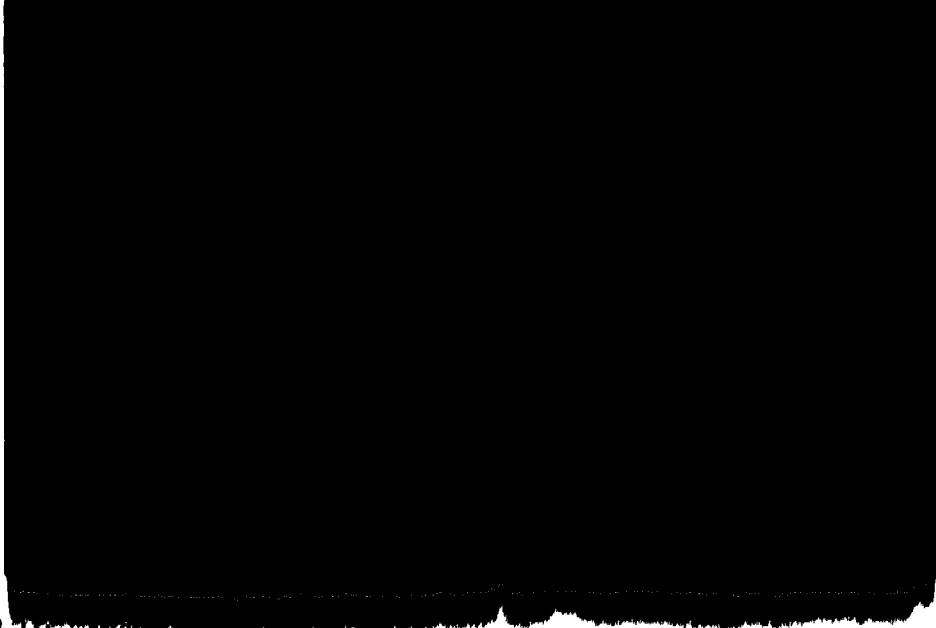


Figure 2.21: Water wheels for spinning.



**Figure 2.22:** During the dry season, *ixtle* is spun by men by hand against the leather knee pad.



**Figure 2.23:** *Trapiche* for grinding sugar cane. Men sit opposite each other, while children goad the bulls. Cane juice collects in vat.



**Figure 2.24: Cane juice is strained before boiling over wood fire.**



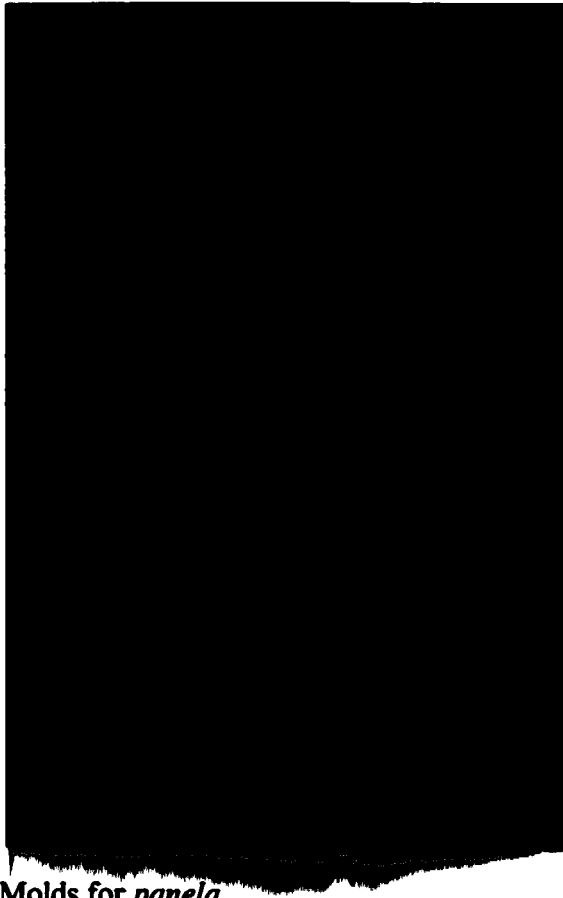


Figure 2.25: Molds for *panela*.



Figure 2.26: *Panela.*

## **Chapter 3: Chatino Medicine**

"Coyote was a doctor, because he was Coyote. He took a spine out of the burro's foot, then the burro kicked him."

### **INTRODUCTION**

My presentation of Chatino medicine contributes to the ethnobotanical and medical anthropological literature in three particularly important ways. First, by allowing the Chatino to speak for themselves, I avoid imposing my own single authoritative voice on their culture (see Chapter 1 on ethics and empowerment). The reader can then see how I came to know what I know, and becomes a participant in the discovery of Chatino medical beliefs and plant use, as well as an independent evaluator of the data. Detailed description of symptoms associated with the various medical concepts makes these concepts clinically relevant to practitioners. Similarly, symptoms associated with plant use make the clinical application of medicinal plants clear and meaningful to practitioners. The most clinically useful herbals, (e.g., Chinese herbals, Grieve 1971, Felter and Lloyd 1983) include symptoms in addition to affected organs, syndromes and diseases, allowing a reader to judge the clinical relevance of an herb to a particular case. Lastly, my work shows the intimate correspondence between plant use and cultural beliefs regarding illness. Indeed, just as I learned of many medicinal plants by leads provided in cultural beliefs, I first learned of many native beliefs by way of my introduction to the local flora (and fauna) and to the uses of medicinal plants.

Plants provided me a wonderful entrance into the conceptualization of illness and native world view in general. Information on Chatino conceptualization of illness was elicited through general discussion of illness, questioning during specific illness episodes, and while learning about and collecting medicinal plants. Discussion of specific illnesses often included reference to plants used for treating those illnesses. So although I present the information in a consistent manner, with illness concepts preceding plant use, in fact the process of learning and gathering the information was two-directional, from illness to plants and from plants to illness.

Through my presentation format I hope to illustrate the intimate connection between plant use and folk illness concepts. I am not the first ethnobotanist to feel that ethnobotanical lists fail to convey the relationship between people and plants adequately. Janice Alcorn's (1984, p. 2) comment on the limitations of ethnobotanical lists is worth quoting: "

Ethnobotany, to most people, means lists of plants found in foreign environments peopled with "primitive natives." The value of these dry lists of local plants, their names and uses is thought to lie in the presentation of empirical knowledge about valuable plants together with a smattering of quaint beliefs disjunct from any cultural context. The former, it is thought, might someday prove of use to modern society ("us") and the latter is entertaining folklore. And in fact ethnobotanical data have generally been gathered and stored much the same way that the pioneer anthropologist Franz Boas gathered and measured moccasins as "cultural traits." A plethora of ethnobotanical lists present useful plants under broad general categories of "use" with little or no accompanying information concerning the "uses's" context---or any information on the

maintenance of the plant so used. Like the moccasins catalogued and placed on museum shelves, these lists are occasionally accessed by researchers; pharmacologists, phytochemists and economic botanists periodically poke [sic] through ethnobotanical literature searching for empirical clues about plants' innate qualities. But while simple useful plant lists are still published under "The Ethnobotany of X," the scope of ethnobotany has changed since Harshberger (1895) first used the term for "the study of plants used by primitive and aboriginal people. The most complete modern definition of ethnobotany is "the study of direct interrelations between humans and plants," a study "concerned with the totality of the place of plants in a culture" (Ford 1978).

In order to stress the integrative nature of symptoms and causes of illness, I begin my presentation of Chatino medicine with the amphoteric concepts of hot and cold that span the full spectrum of Chatino illness conceptualization. Considerable overlap exists between the different Chatino medical concepts, i.e., symptoms and causes, related to illness (Fig. 3.1). Therefore, as each subsequent Chatino medical concept is introduced in turn, heat and cold, and other major Chatino medical concepts, such as *aire* and anger (*muina*), will figure again and again.

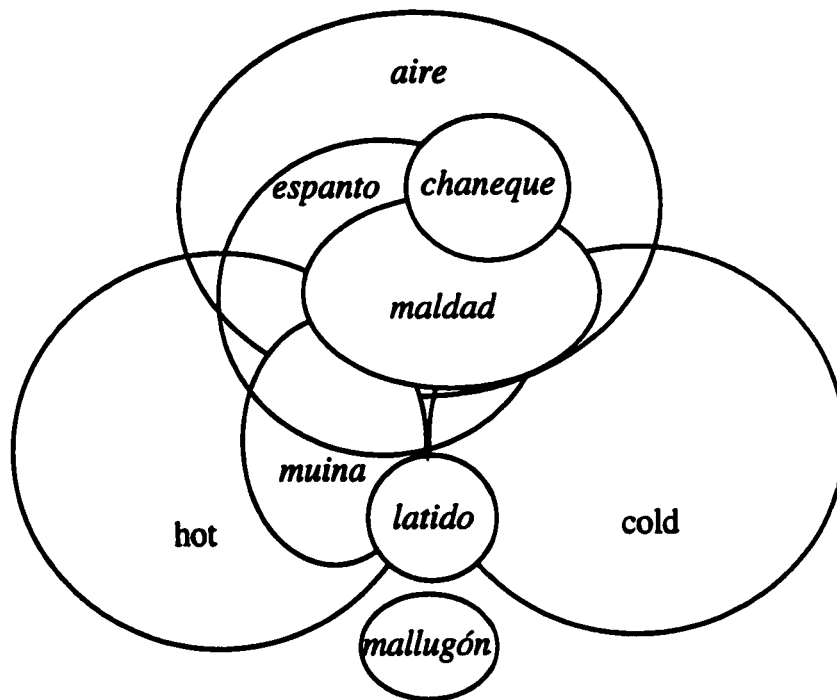


Figure 3.1: Overlap of major Chatino medical concepts.

## Chapter Outline

The section on heat and cold includes a discussion of hot and cold as root cultural metaphors, i.e., concepts extending beyond illness to cosmology and religion, plants classified as hot or cold, and hot-cold related symptoms and causes of illness. Precautions regarding use of hot and cold foods and herbs which may cause or exacerbate illness are discussed.

The next section includes gastrointestinal illnesses, including diarrhea, *latido*, and *empacho*. *Latido* is a symptom or illness of major significance in Chatino society. *Latido*, often associated with anger, leads into the section on *muina* (anger). Both diarrhea and *latido* are classified by hot and cold types. For example, *latido* associated with anger is always hot.

Anger and envy are causes of *maldad* (maleficence) or sorcery. *Maldad*, envy, *aire* (including cold air and evil air), and dreams can lead to fright. Note that *aire* and *maldad* are associated with discrete physical symptoms. *Aire* is a major illness concept in its own right, on par with hot and cold, although *aire* can also be associated with cold (predominately), as in cold *aire* and *aire* of dreams of the dead.

Major emotions causing or manifesting as illness in Chatino medicine are *muina* (anger), a hot disorder, and *espanto* (fright) which can be caused by, or manifest as, both heat and cold. Two emotions of lesser cultural importance are *vergüenza* (shame), and *tiricia* (sadness). *Espanto* and *tiricia* overlap considerably with one another, and with *maldad* and *aire*, so discussion of *espanto* follows *aire*. As most curing rituals are directed at treating *espanto*, I

include curing with *espanto*. Blood and *fuera* are presented last. Medicinal plants for each illness concept are presented at the end of each section.

### **Note on Language Use**

The Chatino often retained their idiom when speaking Spanish, which extended to the domain of illness. For example, standard conversations along the paths did not follow typical Spanish greetings, such as "*¡Hola, como está?*" but were patterned after Chatino greetings: "Where are you going (*adonde va, wala ndzaa*)?" A typical response might be, "Below (*abajo, ndzuu lakui*)," or "Up there (*arriba, ndzuu lacha andekua*)." In similar fashion, one was "grabbed" by illness, experienced "itching" in the throat associated with cough, and "jumping stomach pain," where "stomach" at times was restricted to the region of the epigastrium, and at times extended to the entire, upper and lower, abdomen, analogous to the Chatino term *tyikiee*.

### **HEAT (*CALOR, TYIKIE'*) AND COLD (*FRIALDAD, JLYA*)**

#### **Heat and Cold as Root Metaphors**

Heat of the sun, *tyikie' kuashi*, is from the dry places, "*shi kyuitiyu*, the dry hills, where there is no water." The dry hillsides where one is exposed to the hot sun while walking long distances or while working in one's milpa, are hot. On the hillsides one experiences heat of the midday sun, and is struck by heat.

*Kieku*, the *barranca*, where water runs, is the low, wet, cold place, where one can slip crossing wet rocks and experience fright by water (*espanto de agua*), which is cold. *Jlya kiekú* is the cold from the *barranca*.



The sun god (*santo sol, dios del sol*), is referred to by two Chatino terms, **jo'o kuitsa**, which also means twelve noon (*mediodía*) and **jo'o kuashi**. **Jo'o** is sometimes translated as saint/*santo*, and sometimes as god/*dios*. [Since the introduction of Christianity, Chatino gods, **jo'o** (Chatino has no plural form), have been relegated to the lower position of sainthood, so as not to compete with the one God.] **Kuitsa** refers more to the sun's rays, the sun's light, while **kuashi** refers more specifically to the sun's heat. The two terms are often used interchangeably. Heat from the sun is also referred to a **tyikie' kuashi**, *calor del sol*, heat of the sun. However, **tyikie' kuashi** refers to fever as well as the heat of the sun. Heat can also be caused by fire, **ki**, *lumbre*, and by lightening. Witnessing a domestic quarrel in the kitchen by the cooking fire or watching one's thatch house burn down are two possible causes of fright by fire.

In contrast to the cold wet barranca and the hot hillsides, *tierra fría*, refers to the cold country at higher altitudes, where temperatures drop markedly at night and certain "cold" varieties of maize, beans and squash can grow. Pines cover the tops of high peaks and serve as a source of medicine, firewood, illumination, and for construction. *Tierra caliente*, at altitudes ranging from about 300m to 1000m, refers to hot country, where malaria, mango, and coconut palm are abundant and certain "hot" varieties of beans and maize can grow. Water, needed for washing of maguey fibers, is also abundant in the hot country.

A fall in a *barranca*, at any altitude, can cause water fright (*espanto de agua*), which is cold, while exposure to the hot sun on a dry hillside, regardless of altitude, will be hot. Plants growing near water can have cooling properties, but many common roadside plants are also cold. Plants from high altitudes are not

necessarily cooling (cf., Kaplan and Kaplan 1960), although one plant, *tabardillo* (*Hedyosmum mexicanum*, Chloranthaceae), growing in streams at high altitudes, is especially recommended for stubborn fevers. The ecology of the plant may be a reason for its special cooling properties. Men living at middle or low elevations make special trips to cold country to bring back *tabardillo* when a fever does not subside after using more accessible means.

Heat and cold are ultimately attributed to nature—heat to the sun, fire, or, more rarely, to lightning, and cold to water. (Cold is never attributed to the moon god, *jo'o koo'*.) Heat and cold manifest in the body as physical illness, and are distinguishable by the symptoms they present. Both over exposure to cold water, from washing maguey fiber (*ixtle*) for many days, and falling in the *barranca*, can cause cold symptoms, such as swelling. Both exposure to heat of the midday sun, and the fright experienced on seeing one's thatch house burn, can cause symptoms of heat, such as headache.

Medicinal plants and foods are also classified as hot or cold. This correspondence between symptom and plant folk classification forms one basis for treatment (e.g., Browner 1985a, b, Foster 1985, Messer 1991). Hot herbal remedies are indicated for cold conditions, and cold herbs are used to treat hot illnesses (Table 3.1).

For example, *mezcal*, distilled from *Agave angustifolia*, is cold but alcohol from distilled cane sugar is hot. "When [a child] is with fever, we bathe [him] in warm water, and then dry [him] with a towel, dry [him] well. [We] apply lukewarm *mezcal* to the whole body, [because] *mezcal* is cold (*fresca*). We put alcohol over our whole body before going to sleep to get rid of tiredness." Lemon

juice, which is cold, can serve as a substitute for applying herbs topically when *mezcal* is not available (Table 3.2).

Color does not consistently demarcate hot and cold qualities of the plants. Red color is sometimes matched to the illness, so that red plants are used for red and hot symptoms, as in the case of *Hibiscus sabdariffa* (Malvaceae), used for dysentery. The red color of the *H. sabdariffa* flowers suggests its use when blood is present. In other examples, such as the "red" and "white" leaves of *Ricinus communis* (Euphorbiaceae), red plant features are considered signs of warming properties used for white cold symptoms, and white plant features indicate use for hot red symptoms.

Table 3.1: Cold, hot, very hot, and bitter qualities of medicinal plants.

<b>Cold (<i>fresca</i>)</b>	<b>Bitter</b>
jamaica ( <i>Hibiscus sabdariffa</i> , Malvaceae)	
quelite de conejo [ <i>Eupatorium (Fleschmannia) pycnocephalum</i> , Asteraceae]	
tronadora ( <i>Tecoma stans</i> , Bignoniaceae)	+
cola de caballo ( <i>Equisetum</i> sp., Equisetaceae)	
gordolobo ( <i>Gnaphalium attenuatum</i> , Asteraceae)	
guarumbo ( <i>Cecropia peltata</i> , Cecropiaceae)	
zapote blanco ( <i>Pouteria campechiana</i> , Sapotaceae)	
verbena ( <i>Verbena</i> sp., Verbenaceae)	+
huaretero ( <i>Calea urticifolia</i> , Asteraceae)	+
yerba de cruz ( <i>Eupatorium odoratum</i> , Asteraceae)	+
jugo de limón ( <i>Citrus limon</i> , Rutaceae)	
moco de guajolote ( <i>Hyptis verticillata</i> , Lamiaceae)	+
rosa de castilla ( <i>Rosa centifolia</i> , Rosaceae)	
<b>Hot (<i>caliente</i>)</b>	
epazote ( <i>Chenopodium ambrosioides</i> , Chenopodiaceae)	
chicayotillo (unidentified, Vitaceae)	+
hoja de aguacate ( <i>Persea americanum</i> , Lauraceae)	+
lengua de vaca ( <i>Buddleia?</i> )	
laurel ( <i>Litsea glaucescens</i> , Lauraceae)	
carrizo ( <i>Arundo donax</i> , Poaceae)	
hoja de naranja ( <i>Citrus sinensis</i> , Rutaceae)	
albahaca ( <i>Ocimum basilicum</i> , Lamiaceae)	
pitona ( <i>Lippia alba</i> , Verbenaceae)	
maguellito de tobalá ( <i>Agave potatorum</i> , Agavaceae)	
maestrita ( <i>Artemisia mexicana</i> , Asteraceae)	+
yerba buena ( <i>Mentha x piperita</i> , Lamiaceae)	
canela ( <i>Cinnamomum zeylanicum</i> , Lauraceae)	
yerba dulce ( <i>Lippia</i> sp., Verbenaceae)	
orégano ( <i>Origanum?</i> <i>Lippia?</i> )	
pimiento ( <i>Piper nigrum</i> , Piperaceae)	
manzanilla ( <i>Matricaria recutita</i> , Asteraceae)	
<b>Very Hot (<i>muy caliente</i>)</b>	
canelillo ( <i>Montanoa xanthiifolia</i> , Asteraceae)	
cuanasana ( <i>Ageratina tomentella</i> , Asteraceae)	+

### **Inconsistency in Reporting of Hot and Cold Qualities**

I occasionally found inconsistencies in the hot and cold qualities reported for medicinal plants, among individuals in a given community and between communities. While overall I found consensus within a community regarding use of particular herbs, individuals, even medically knowledgeable individuals, at times did not agree with, or seemed unaware of the general usage. I give an example of individual inconsistency in the reported quality of *pitiona* (*Lippia alba*, Verbenaceae) below.

*Pitiona* is usually considered warming, and is often used for *aire*. "*Pitiona*, *yerba buena* (*Mentha x piperita*, Lamiaceae), *canela*, *albahaca*, are hot. A bath for the feet with *epazote* (*Chenopodium ambrosioides*, Chenopodiaceae) is for cold. *Yerba santa* (*Piper auritum*, Piperaceae) is also hot." A woman explained how to care for newborns, "Leaves of *naranja* (*Citrus sinensis*, Rutaceae), [and] *pitiona* to take out the cold, one boils [them] and then bathes." However, one older man could not eat iguana, which is always prepared with *pitiona* (*Lippia alba*, Verbenaceae) "because *pitiona* is cold," I was told. I guess that *pitiona*, which is generally considered warming, is used as a flavoring for iguana because iguana is cold. The old man was probably referring to the whole iguana dish, a cold dish, not to the *pitiona* which is warming.

Communities also varied in the hot and cold qualities assigned to foods and plants. I discuss variation between Tataltepec and Zenzontepec in some depth at the end of this chapter.

### **Pulse diagnosis of heat and cold**

Curers rely on pulse diagnosis to determine the cause of illness.

Generally, a slow pulse is considered a sign of cold and heat is indicated by a rapid rushing pulse. A curer took his wife's pulse and said, "Heat from anger (*muina*)."  
"How do you know it's heat from anger?" I asked. "[The blood] flows like foam, like foam flowing. "What is the pulse from cold like?" "Every once in a while the blood goes, choppy, nothing more, comes and goes, choppy." A slow pulse is also described as "[the blood comes] every once in a while." Curers will distinguish different possible causes of the cold condition. Fright by water and fright by snake are both cold frights that can be distinguished from one another by the pulse. Similarly, heat can be differentiated as being caused by fright by fire at night, or by the midday sun.

When [the illness] is from heat, [the pulse] jumps fast, and when [the illness] is from cold, [the pulse] calms down. And when [the illness] is from fright, [it's] worse, the pulse is gone (*no está*); when [the illness] is from cold, the pulse dries up, [it] ceases to run (*calma correr*); when one dreams of a dead person---the same, and when [the illness] is from heat, [the pulse] runs.

### **Post hoc diagnosis of heat and cold**

Diagnosis can be based on successful treatment. If a condition responds to heat treatment, than the post hoc conclusion is that the condition was due to cold. A thirty-four year old man described his two year old condition which he attributed to cold. 'I get hives over my whole body, when I bathe and in the morning when it rains. I itch. When my clothes get wet then it [the hives] come

out." "*You don't feel weak?*" I asked. "Yes, always, I tire walking fast, my legs get tired here," he pointed to his calves, "There are people who walk fast, but I can't stand walking." "*How [are the hives] relieved?*" I asked. "If there is fire in the house that starts to warm up, then [they] go away. [They're] from the cold, [and] go away with heat."

### **Causes and Symptoms of Cold**

Cramps, pain, numbness and paralysis, especially of the lower body, the spleen, the left side of the body, hiccups, and swelling are typically associated with cold. Fever and diarrhea may also be due to cold. People often complained of feeling cold generally, in specific parts of the body, or when bathing. Some complained of their condition worsening or appearing with exposure to cold.

"*Why does one have cold?*" "Because they put on wet clothes, or their clothes get wet in the rain, or those that wash *ixtle* too, because they wash [it] in the river, because they work all day washing *ixtle*." Work in the fields is mostly during the rainy season, when downpours in the late afternoon leave clothing drenched for several hours. Pottery work with wet clay is also considered cold. Symptoms of cold include a subjective feeling of cold and cramping. "*What are the symptoms [of cold]?*" "Besides feeling cold? When they get cramps too." "*How do you know it's cold?*" "I feel cold from my waist down when it's a cold fright."

Since cold symptoms, such as feeling cold, can be caused by water fright, ritual cures are often employed, in addition to ingestion of or steam baths with warming, i.e., hot, herbs to drive out the cold.

A fifty-three year old woman complained of having left ankle pain for ten years. "I don't feel hungry. I think that because I don't eat I'm getting skinny. I was fatter, but I'm getting thinner. [I used to feel] cold everyday, now it's getting better, but always something cold hits me. A woman in Mexico [City] treated me, with herbs too, with egg, the way they cure." She was referring to a *limpia*, a ritual sweeping, probably with rue (*Ruta chalapensis*, Rutaceae), *pirúl* (*Schinus molle*, Anacardiaceae), and basil (*Ocimum basilicum*, Lamiaceae), followed by an intact raw egg rubbed over the body, a common treatment for *susto* (fright) among mestizos.

*Hoja laurel*, *kishe tyishi* (sweet herb), leaves of *Litsea glaucescens*. (Lauraceae) are used to prepare a hot bath for "when one has cold, or has gotten cold, [when one] feels cold in the feet." The bark of *palo de calabaza* is boiled and the strips of hot bark directly applied to the feet "for *reúmas*, for the cold, for *vaus* (steam)." The fresh leaf is used externally for pain. *Tintallo* (*Hyptis suaveolens*, Lamiaceae) is similarly used for *vaus*, a hot steam bath. A warm sitz bath, from the waist down, of *yerba buena montéz* in the afternoon before going to sleep, is for swelling of the knees and for fright. A hot sitz bath with herbs for *aire* can be used to treat swelling, with water as hot as one can stand, "one burns the feet." These are the same herbs used for madness and other disorders of *aire*, *yukundó*, *albahaca* (*Ocimum basilicum*), *pirú* (*Schinus molle*), *canfor* (*Cinnamomum camphora*, Lauraceae), *nuez mezquillad* (*nuez moscada*, *Myristica fragrans*, Myristicaceae), *puma de mar*, *crimostaza*, ground in warm water or mezcál."



## **Pain**

Pain in the bones, *dolor de huesos*, comes from cold. "Tsu'u kie, bone pain, [and] calf pain, come from fright from water, diarrhea too." A forty-nine year old man suffered cold hands and feet for ten years, "When it gets cold my bones ache. When I go to sleep at eight [p.m.] and get up at one [a.m.], my whole body aches, my hands, feet, back, soles of the feet burn. Like a crushed coal, it burns, burning and hot. I worked making roof tiles (*sacar tejas*) with clay, that's how I know that it's from cold." He experienced cold night sweats from his waist down. His pulse was soft and slow, three beats to my one breath (one inhalation and exhalation).

Leaves of marijuana (*Cannabis sativa*, Cannabidaceae), a cultivated introduction, are soaked in alcohol for one week, until the liquid turns yellow, to produce a hot tincture that can be used as an unguent rubbed externally on the affected body part. "It's hot, [for] when there is cold (*frialdad*)."

## **Numbness and paralysis**

Numbness and paralysis are also considered cold. Justino considered his own paraplegia to be from cold, as did a curer who treated him by sucking objects. "Crippled by cold (*encoja de frío*, or *encoge de frío*, shrunken by cold)." were the curer's words. Justino also firmly believed he was the victim of witchcraft, which the curer had confirmed by sucking out objects. (See section on *aire*.)

## **Cold Swelling**

Swelling, especially pale "white" swelling, is a common symptom of cold. Cold often causes pain and swelling of the knees, legs and low back pain. Cold can be from exposure to cold and/or cold fright. A seventy-three year old man complained of back pain. After a fall from a horse, his whole back hurt and he could not extend his right hand. His feet, calves and knees were swollen which he attributed to "work in the field, in the cold."

## **The Spleen and Left Side of the Body**

The front, left and lower aspects of the body are associated with cold. The spleen, designated by a Spanish loan word, **basu**, in Chatino, from Spanish *bazo*, is associated with cold. Hence, swelling on the left side of the body over the spleen will be attributed to cold. "[There are things that] injure the spleen and things that benefit it. One can't put cold things over the spleen." "One swells up (*se aviente uno*), gets puffy (*se esponja*), the left side feels inflated (*se siente aventado*), pure cold [one] has."

Justino attributed his edematous left foot to cold, explaining, "Left is cold, the people say." He often expressed concern about the cold. "My back, from my waist (*cintura*) down, my calves, hurt a lot. It would be [from] cold." "Yes, cold," the seated neighbor assented. A sixty-year old man's fifth finger of his left hand was curled up from arthritis. "A lot of cold," he said. One man had dysentery diagnosed as cold type, because the abdominal pain radiated from the epigastrium (half-way between the navel and the xiphoid process) to the back and left side of the man's body.

The reddish veined leaf of *gría roja*, *Ricinus communis* (Euphorbiaceae), more commonly known throughout Mexico as *higuerilla*, is considered hot and used for cold conditions. The leaf can be applied externally over the left side of the body, above the spleen, to relieve cold swelling. Another, whitish veined variety of *Ricinus communis*, *gría blanca*, is considered cooling and applied to the right side of the body, above the liver, to relieve hot conditions.

### **Fever and Cold**

Fever is not always considered to be a hot condition, and in fact may be due to exposure to cold (see section on *aire*). Once, with fever, headache, and very bitter taste in the mouth, Justino suspected a correlation with exposure to cold, "Yesterday I bathed in cold water." Aspirin, which is hot, as are all pharmaceuticals, is indicated for fever from exposure to cold wind (*aire*).

Malaria, with alternating extremes of high fever and teeth-chattering chills, is associated with splenic swelling and considered cold. "For example if the spleen is sick that's when one has malaria, and feels cold, chills and fever (*calofrío*), shivers from cold, and then gets fever." The heated bark of *zompante* (Fabaceae) is put underneath the soles of the feet "like sandals" to relieve malarial fever.

### **Diarrhea and cold**

External cold can cause diarrhea. When I told my hosts that I had diarrhea, they said, "You should *telí* [us], [because] there are herbs to drink," and immediately suggested I drink a tea of *manzanilla* (*Matricaria recutita*, Asteraceae) with *santa maría* (*Tanacetum parthenium*, Asteraceae), and eat white

rice without oil. *Matricaria recutita* is a hot herb, so by prescribing *M. recutita*, my hosts implied I had a cold type diarrhea. Justino inquired as to the possible cause, "What have you eaten? It's also very cold in your room." I was additionally told to avoid avocado, because avocado "is damaging, it's very cold."

### **Burps and Hiccups**

Burps and hiccups are due to cold in the stomach. Cold can attack more than one part of the body, so several organs may manifest cold at once. In this example, a sixty-three year old woman complained of knee pain with acidic reflux (*agrudas*) at night, both due to cold. She had difficult breathing on exertion and felt cold. "I have a lot of cold, rheumatism." One month prior to our meeting, while visiting her sick daughter in Mexico City, she sat in the cold washing clothes, when she "got knee pain because of the cold." *Yerba dulce* (*Lippia* sp., Verbenaceae) is taken as a tea internally for eructation, "when the stomach is acidic," as are other herbs that warm the stomach. (For additional stomach warming herbs, see *latido* and *diarrhea*.)

### **Cold aire**

Cold outside air causes the common cold, *gripa*. A sudden change in the body's external temperature is the main cause of the common cold. "*Se pisca*" is a colloquial expression that means "to get cold," probably bastardized from Spanish *pescar*, to get, catch, obtain. An example is when one puts one's foot into hot water after standing on cold ground. The abrupt transition from hot to cold or vice versa is considered harmful. An abrupt temperature change can cause cold to enter the body. Cold then enters the body as a cold wind, *aire frío*, *kuē'ē jlya*.

When the body is warm, one is particularly vulnerable to attack by cold wind. Perspiration from normal daily activity indicates the body is overheated, hence vulnerable to attack from cold. Foster (1994) discusses in depth abrupt temperature changes during "at-risk" states as a cause of illness in Mesoamerica. After I warmed an eight year old boy's umbilicus with moxa (*Artemisia* sp., Asteraceae) as treatment for enuresis (bedwetting), his father admonished him, "Don't get up so that the cold doesn't strike you." One day I was perspiring from my forehead, though my fever had abated. I was told I should keep my head covered, so that I don't get cold.

"*Té de limón* (*Cymbopogon citratus*, lemongrass, Poaceae), *yerba buena* (*Mentha x piperita*, Lamiaceae) and *canela* (*Cinnamomum zeylanicum*, Lauraceae) are good for the common cold. When one sweats and is hit by the cold wind, then one catches cold, with headache and fever. *Aire* is cold. When one leaves the house, from the cool air of the house at noon, and is struck by the hot air, that can also cause the common cold. I always wear my hat, I have a delicate head that is easily hit by wind, that's why I always wear it." Other remedies for cough due to cold include tea prepared from *hoja de naranja*, leaves of *Citrus sinensis*, or tea from mango (*Mangifera indica*, Anacardiaceae) leaves boiled with cinnamon.

Cold *aire* can also enter the body, causing abdominal fullness and bloating. "*Aire* my stomach has, from cold, my stomach is distended, no air goes out from my *tyosë'ë* (anus)."

## **Enuresis**

Enuresis or bedwetting, is a cold condition. Children are often cold and wet, and often seen running around barefoot, pant legs soaked to the knees with wet mud. Younger children play naked outdoors even on cold rainy days.

One Chatino cure for enuresis entails applying a "warm piece of *comal* (clay surface used for making tortillas) wrapped in a *florifundio* (*Brugmansia candida*, Solanaceae) or *bule* (*Lagenaria siceraria*, Cucurbitaceae) leaf, and placed on the left side [of the body], above the spleen. The spleen has a lot of cold, [on the] left side." The foam that exudes from any green log heated in the fire and applied to the umbilicus is an alternate treatment for enuresis. One person specified that only the heat-exuded foam of green *sancayetano* (also called *diente del perro*, *Solanum* cf. *lanceolatum*) could be used, and the treatment is repeated for two to three consecutive days.

## **Dreams and Cold**

Dreams of the dead are always cold and cause cold symptoms such as swelling. An eighty-nine year old curer complained he dreamed only of dead people. "My feet swelled, my whole body up to my head, because of the cold that grabbed me. They say envy, *maldá*." (See section on maldad and dreams.)

A forty-year old woman dreamed her dead mother told her to eat chicken soup. "A [dream of a] dead person, pure cold it is." "Chicken soup" is a Chatino euphemism for a funeral, since chicken soup is always eaten at funerals.

### **Symptoms of Heat (tyikie', *calor*)**

Headache, bitter taste in the mouth, toothache, and fever, are all symptoms of heat. Red skin rashes are also usually due to heat. *Mal de ojo*, conjunctivitis, comes from heat. People with hot conditions complain of feeling hot generally, of feeling hot after consuming hot foods such as coffee, or of disliking covers and warmth. "I feel heat, I don't like covers, I can't cover myself until I bathe, then I can cover myself."

A tooth abscess may be caused by anger or by the heat of the sun. For example, one person related that her toothache "without cavities" was caused by heat of the sun and cured with prayer.

Anger, a hot condition, comes from the heat of the place where one experienced the insult, from the sun or from the cooking fire. "When one gets angry (*se amuinan*) when it's hot [outside], that heat of the sun grabs hold and one loses appetite, gets sick and weak." Anger can be both the cause and a symptom of heat. Anger is discussed in detail later, under *muina*.

The liver and the right side of the body are associated with heat. As mentioned earlier, a whitish veined variety of *Ricinus communis*, *gría blanca*, is considered cooling and applied to the right side of the body, over the liver area, to relieve hot conditions. For more examples, see "Fever and heat," below.

Medicinal plants that are bitter and cooling are typically used for *latido* and *muina*, both hot conditions. "One drinks bitter so that the heat descends [from the head]." While bitter plants are sometimes cooling, bitter does not consistently correspond to hot or cold qualities (Table 3.1). Frei (1997: 55) found

that among the Isthmus Zapotec the quality of bitter was often paired with cold, suggesting that these might be correlated. Brett (1994: 225) found that among the Tzeltal Maya bitter plants were used primarily for gastrointestinal complaints. Brett's findings are consistent with Chatino use of bitter plants.

### **Hot Swelling**

While swelling in general is considered to be due to cold, the Chatino consider swelling accompanied by redness to be due to heat. "Swelling is cold, except [one curer] treats a type of swelling that is red and is hot." Two folk varieties of *Acalypha lovelandii* (Euphorbiaceae), a red and a white, are used for red and white swelling respectively. Here like is assigned to like, rather than the principle of opposites as applied to the two folk varieties of *Ricinus communis*, another member of the Euphorbiaceae (see "The Spleen and Left Side of the Body," above).

### **Diarrhea and Heat**

Red and yellow diarrhea are considered hot. Red diarrhea is commonly treated with a tea from calyces of *jamaica*, *Hibiscus sabdariffa* (Malvaceae). Egg white and earth are mixed in a small hole in the ground with a stick or teaspoon and applied to the umbilicus for egg yolk colored diarrhea. (Appears again in "Diarrhea" below.)

### **Fever and Heat**

Fever is a typically a hot symptom that is treated with cooling herbs. (For a discussion of fever from cold, see "Fever and Cold" above.)



*Pastorcita* (*Bidens odorata*, Asteraceae, and an unidentified Scrophulariaceae) is "rubbed in water until a white froth forms. The froth is then rubbed over the whole body with rose petals to bring down a fever. *Pastorcita* grows in or near water. *Pastorcita* is cold (*fresca*). *Nyashite* (*pastorcita*), for *muina*, anger (*coraje*), nerves, [is] crushed in water and drunk."

Rose petals, *rosa de castilla* (*Rosa centifolia*), are boiled and the tea is taken internally for fever. The cooled tea is used as an eye wash for "cataracts and *nube del ojo* (eye cloud), [when there is] a white thing in the eye and one can't see."

*Zapote durmilon*, *Pouteria campechiana* (Sapotaceae), is also used "for high fever [and] one can't sleep. Put [the leaves] in the bed, under the head, and drink twenty leaves as a tea when one can't sleep. This makes one drowsy (*le da sueño*)." (For another use see "*Tiricia*, *ojo* and *espanto de niños*.")

Leaves of *tronadora*, *Tecoma stans* (Bignoniaceae), are also used as a sudorific for fever, finely chopped, sprinkled with mezcal, then wrapped around the feet and over the liver area with a large leaf such as *Xanthosoma robustum* (Araceae), *Ricinus communis*, or with cloth, "until [the *tronadora* leaves] turn black, dry, yellow, are burned." Other herbs, such as *yerba de conejo* [*Eupatorium* (*Fleischmannia*)*pycnocephalum*, Asteraceae] and *yerba de calor* (*Bidens squamosa*, Asteraceae) are used externally, like *Tecoma stans*, for *calentura external*, fever.

"Leaf of *lima*, [or] of *limón* (*Citrus limetta*, *C. aurantiifolia*, Rutaceae) cut up very small like this, with *huichicate* (*Xanthosoma robustum*) leaf, one puts mezcal, egg white from a turkey egg, then mixes it in this plate, or if one doesn't

have a dish, in the leaves. One puts a match to the *mezcal*, wraps the feet, but after bathing well, and drying with a towel. And afterwards, when one has fever, but strong [fever], and after [treating in this way] one or two hours it takes out the fever. You can also use *chamiso* (*Baccharis salicifolia*, Asteraceae), *cacahuanano* (probably *Dahlbergia* sp., Fabaceae), with leaves of *limar* (*C. aurantiifolia*, Rutaceae) to lower the fever. On the right side one puts it the same, one makes three leaves, one for each foot and one for the right side. They get constipated [when] the heat gets more closed inside. One sticks [the preparation] on the right side, on the liver."

The leaves of *tabardillo* (*Hedyosmum mexicanum*, Chloranthaceae) are placed under the *petate* (palm sleeping mat), and under the soles of the feet, to induce sweating to lower stubborn fever, "then [the fever] comes out."

Seeds of *almendra de cedrón* (*Terminalia catappa*, Combretaceae) scraped into water or *mezcal* are for fever, *aire* and *ataques*. The fruit is edible and the seed is used as a substitute for almonds to flavor chocolate.

Various hot illnesses are characterized by fever, sometimes accompanied by diarrhea. Old man's heat and heat of pregnancy are two hot conditions characterized by fever.

#### **Old Man's Heat** (tyikie' kusu, *calor de viejo*)

*Calor de viejo*, tyikie' kusu, or old man's heat, is the illness resulting from the influence of the dead on the living. Dead neighbors and relatives are just as malicious as they were in life (see '*maldad*'). A son who displeased his father will

find himself suffering when his father avenges his anger from the grave in the afterlife.

One man attributed old man's heat to the sun god, **jo'o kuitsa**. "The sun gives an energy, **kunasë**, heat vapor, what you see rising over asphalt when it's very hot, that's the heat that causes old man's heat. But yes, that heat of the sun combines with the guilt of the grandfathers, especially if a son hits his mother and doesn't ask forgiveness from the mother, this can pass to the grandchildren or to a third generation." Birth defects, such as missing digits, are "due to the sins of the fathers passing to the sons."

Old man's heat has physical symptoms that help to identify it, in addition to a history of family conflict. Fever is the main symptom associated with old man's heat. One man was more specific, "Cold from the knees down and heat above [in the upper body], with fever, sometimes [accompanied by] diarrhea."

The general consensus in the community was that Justino suffered from *calor de viejo*, either as punishment for his father becoming a Protestant evangelist, or as retribution for the violent actions of his deceased grandfather who was "very fierce (*muy bravo*)." "When you dream ugly like that you have to pay masses to the ancestors. We did everything already. People say I'm sick because my grandfather hit a lot. I'm paying so that he can refresh himself (*refresca*, be cool)." In addition to paraplegia, Justino suffered from malaria, diabetes, and occasional bouts of diarrhea (probably from intestinal worms transmitted by contaminated drinking water), so a diagnosis of old man's heat would not be inconsistent with his paralysis due to cold. Old man's heat is a particularly pernicious problem, and sometimes, as in Justino's case, fatal.

According to some, herbs for fever, such as *cacahuanano* (probably *Dahlbergia* sp. Fabaceae), can be used, usually externally, to treat fever of old man's heat. Another disagreed, "*cacahuanano* is for regular fever, [for which] the leaves are ground fresh with water and the liquid used for bathing, but for old man's heat---only prayer." A formula of herbs boiled for external bathing for old man's heat with swelling of the legs consisted of: *tepozán* (unidentified), *garañona* (*Croton ciliatoglandulifer*, Euphorbiaceae), *chibarobo*, (*Lantana* sp., Verbenaceae) *casahuate* (*Ipomea murucoides*, Convolvulaceae), *luís perez* (*Pluchea salilcifolia*, Asteraceae).

In Nopala, *los muertos están jalando*, the dead are pulling, so the cemetery figures in curing. "In case the person has a fright or some evil from some person that died, then one has to light the candle in the church and in the graveyard. So that in this way the feeling of the dead person against the patient will retreat."

"Does that mean the dead person came to molest him?"

"Precisely, or better, to molest him in order to take him away."

"When one dreams, like, a snake?"

"That's different. One has to go bathe in a river very early in the morning, and be cleansed with some plants, some from the river, that grow on some rocks, so that the evil spirits will depart from the body."

"One goes alone?"

"Yes, alone one goes."

"A healer doesn't go?"

"One can't say that a healer doesn't go. Let's suppose that a woman's husband died, and [to cure] the heat of the husband one has to find a *curandero* in

order to bring her to where the rivers meet. There the *curandera* puts [the widow] in the water with all her clothes, so that the heat of the husband goes out. The woman, for several days, doesn't do any chore, no work, because otherwise she will get sick. When it is said that one should take care (*cuidar*), one shouldn't share the same dishes with the family, their soap, everything separate, because it's delicate, *pues*. In the days of treatment one shouldn't greet people, nor break a branch."

"*In that case one can't leave the house?*"

"One can't leave the house. One can't touch anything, *pues*. At the end of the treatment the woman is free of him. She can do what she pleases, what she feels like. She can find another man without the new man running the risk of dying from the heat of the dead, **chikie' nennujui**" (Nopala variant of Zenzontepec **tyikie' nennujui**).

I related the story of a man who suffered excruciating foot pain and underwent multiple surgeries, acupuncture treatments and shoe fittings before finding partial relief. After his father got sick he never went to visit him, even as his father lay dying. He did not go to his father's funeral. My Chatino listeners said, "A curse."

### **Heat of Pregnancy (kue'ya, *chiple*)**

A pregnant woman can cause her husband to become ill. This is probably a form of *couvade*, where fathers-to-be develop sympathetic symptoms that are relieved after the woman gives birth. "When a woman is pregnant the man is struck by heat. [He becomes] *chiple*, anemic. The women do *maldá* (witchcraft,

evil, maleficence) to the man when he is using her daily, [so] the [man's] strength is depleted (*se acaba la fuerza*), the [man's] blood is depleted. A woman is *mañosa* (crafty, cunning) if the woman leans on her husband for support when she is pregnant. Then the man gets sick, gets tired, diarrhea, stomach ache, fever." "He gets skinny. The blood [and] sperm are depleted."

"*Kue'ya*, *chiple*, is when the man gets sick with fever or diarrhea when the woman is pregnant. When the woman gives birth (*se alivia*), the man is also relieved (*se alivia*). In [general] assemblies, when someone is sick and they know that his wife is pregnant, they tell him he has *chiple*."

*Chiple* is used as a form of teasing or ridicule of male sexual bravura. For example, P. was said to be *chiple*. "P. has three women, two wives and a single woman---two are sister-in-laws, sisters of his [first] wife, and he is like a bull. Another single woman also has a child by him."

### **Pasma**

*Pasma*, or as a verb, *se pasmó* (*pasmarse*: become chilled, frozen or numbed; to get tetanus or lockjaw; *pasmo*: tetanus, lockjaw; muscular spasm, convulsion or ache, rheumatic pain), refers to a worsening of a hot or cold condition when the heat or cold becomes trapped or closed inside the affected organ or area of the body (*se encierra adentro*). Bronchitis, asthma and cough can be the result of *pasma*, when cold becomes trapped inside the chest.

*Maguellito de tobalá* (*Agave potatorum*, Agavaceae) is for *pasma* and cough. "The leaf is baked, and the leaf sap, the foam that comes out, is squeezed into a jar, or squeezed and put out to collect the night dew, and drunk daily for some

twenty days or so." *Yerba buena montéz* (Lamiaceae), commonly used for digestive disorders, is also for *pasma*. "Sometimes the throat spasms (*se pasma*). [For that] drink hot things and then put cold water in the throat. The throat itches, from going outside from a hot place into the cold, one drinks [*yerba buena montéz*] in tea, it's [considered] hot, a handful, boiled for a short while." When heat gets trapped in the body, the eyes get red, "For example, a person who bakes a lot of bread, then washes his face, they say he remains *pasmo*, his eyes remain red."

When examining my infected bed bug bites, my Chatino hosts concluded that cold became trapped inside, *se pasmó*. They were especially concerned that I had bathed in the cold river on the way to the village. Copious white pus may have supported their conclusion. My open sores were first burned with beef lard (Fig. 3.2), then wrapped with *hoja de pasma* smeared with *copal* resin (*Bursera* spp.) heated over *ocote* (*Pinus* spp.) smoke (Fig. 3.3). My pain and swelling subsided.

### **Hot and Cold Foods and Herbs Cause or Worsen Illness**

Hot-cold classification of foods in Mesoamerica and other Latin American countries has received considerable attention in the literature (e.g., Cosminsky 1975, Foster 1994, Harwood 1971, Mathews 1983, Messer 1981, Molony 1975). The Chatino, like other Mesoamerican groups, consider certain foods eaten in excess to be harmful. Following a simple logic, we would expect excess of hot foods to worsen hot conditions and cold foods to exacerbate cold conditions. This is not always the case, however.

For example, avocado, a very cold food, is understandably avoided during a bout of cold diarrhea, yet when eaten in excess can cause rage, a hot condition. This apparent contradiction may be explained by reasoning analogous to the harm resulting from abrupt transitions from temperature extremes encountered earlier. In this case, a preexisting hot condition, such as *muina*, a smoldering anger, can be exacerbated by eating a very cold food such as avocado. "Eating too much avocado causes anger, but a huge anger, bigger than *muina*."

Both excesses of hot or cold foods can be damaging when one's body is in a heated, hence vulnerable, state. "It's bad to drink chocolate or eat avocado with cheese when one gets angry, the [blood] pressure rises." Chocolate is a hot food while avocado is cold (see "*Muina*").

Exposure to external heat can also predispose one to the risk of eating hot foods. A woman from a village situated in hot country (*tierra caliente*), at low altitude (approx. 300m), near the river, explained. "Chocolate (*Theobroma cacao*, Sterculiaceae) is very hot, and since here it's very hot, [chocolate] is harmful."

Bitter herbs, often considered cold and taken as an antidote for anger, may be damaging when taken in excess. "It's not good to eat a lot of bitter, [for bitter] causes anger."

Pre-existing illness can be exacerbated by hot or cold foods. For example, pineapple and sugarcane, are damaging, and should be avoided when one has cuts, otherwise pus forms. "*Why are they damaging?*" I asked. "Not because they're cold?" was the reply. Queries regarding hot and cold foods were often answered with a rhetorical question, as an exclamation of the obvious.



One woman attributed feeling hot, a key symptom of heat, to consumption of beans, which are hot. "I can't pass beans very well, I think that's why I feel heat." "Are beans hot?" I asked. "They're hot, I say, are they not?"

Pharmaceuticals, although not food, are ingested substances that can also cause illness. Virtually all pharmaceuticals are considered hot. They cause secondary reactions such as headache and rashes that are signs of heat. Alka Seltzer was an exception mentioned, taken "to cool oneself (*refrescar*)."

Fever, although due to cold *aire*, is still considered a hot symptom, so hot herbs for an accompanying cough must be used with caution. I had fever with cough due to cold *aire*. C. advised me not to drink *yerba buena* (*Mentha x piperita*, Lamiaceae), which could impede my healing. "Yerba buena (*Mentha x piperita*) is hot, for that [reason] it causes more damage (*pega más*), it closes here," she pointed to her throat, "[so] better to drink mango (*Mangifera indica*, Anacardiaceae) leaves and cinnamon (*Cinnamomum zeylanicum*, Lauraceae) [for cough]." I asked if cinnamon wasn't also hot. "Yes, but it gets rid of cough." Her husband resolved C.'s concern differently, "Lemongrass tea (*Cymbopogon citratus*, Poaceae, *té de limón*) is cold, [so] it's good mixed with a little hot. Lemongrass, *yerba buena* (*Mentha x piperita*), cinnamon [together] are good for the common cold (*gripa*)."

Hot herbs, although indicated for a given cold condition, may be contraindicated if a person has just ingested cold. (Refer to "Cold *aire*," above, for a description of vulnerable or "at risk" states.) Later C. told me, "You can't drink tea [of mango leaves and cinnamon] because you already drank cold

[tamarind juice] and cinnamon is hot and will cause harm." C. was obviously not intent on helping me find relief for my cough.

Table 3.2: Hot and cold substances.

<b>Cold</b>	<b>Hot</b>
avocado	coffee
atole	chocolate
mezcal	most pharmaceuticals
limón	alcohol
sugarcane	atole
pineapple	beans

### **DIARRHEA, MALPASA DE HAMBRE, EMPACHO AND LATIDO**

#### **Diarrhea**

Diarrhea is a major health problem in rural Mexico, due to the preponderance of intestinal parasites, including *Giardia*, and a number of intestinal worms. Electrolyte and fluid loss due to diarrhea is a major cause of infant mortality. Zenzontepec ranks one of the highest in infant mortality in the state of Oaxaca. INI reports five deaths under the age of five to every one hundred births. The reported figure is most likely low, due to unreported births and deaths of very young children. Many births are not registered until children reach school age.

From a Chatino medical perspective, most simply, red and yellow diarrhea are considered hot, and green and white diarrhea are considered cold. Red refers to blood tinged diarrhea, while the other colors refer to the color of the stool itself. White or green diarrhea may also have abundant mucus. Cause is also taken into consideration when diagnosing and determining an appropriate course of

treatment. For example, in the first passage below, white diarrhea may be due to heat, from a mother's anger affecting the breast milk, or to cold. Treatment differs in each case. Apparently, heat from adults, in the form of *ojo* or a mother's anger, precipitates a cold condition in the infant, which manifests as white or green diarrhea. Successful treatment can also provide a post-hoc diagnosis. I quote two passages on diarrhea at length.

"Green diarrhea is from *ojo*, [one treats] with an egg or a leaf of *florifundio* (*Brugmansia candida*, Solanaceae) or a leaf of *bule* (*Lagenaria siceraria*, Convolvulaceae). Diarrhea [when] one dirties white and has white seeds, seed-like, sort of cut up, like short little balls, is from *muina*, the mother gets *muina*, then one gives [the infant] San Sebastian oil or [it's] from cold, then one gives oil or *yerba buena* (*Mentha x piperita*, Lamiaceae), with *anís* (*Pimpinella anisum*, Apiaceae). There is diarrhea when they dirty yellow, like an egg yolk, like seeing a mango, then it's heat. Then one puts a *comfortiva* (poultice), [with] the egg white, one digs a little hole, the white of the egg one puts in [the hole], one mixes [the egg white and earth] with a stick or a teaspoon, and then one puts [the mixture] on, one wraps [the mixture] in a cloth or a papaya leaf (*Carica papaya*, Caricaceae) and sticks [the poultice] on the umbilicus and with this they get well."

"In order to know if the stomach pain starts from cold, one has to drink *yerba buena* (*Mentha x piperita*, Lamiaceae) with *canela* (*Cinnamomum zeylanicum*, Lauraceae). If [the pain] is from cold, it will go away, and if it's not from cold it will continue. For white or green diarrhea, when the mucus is white, you put a brick in the fire to heat [the brick], wrap it in a rag, is all, and one feels

[the warmth, applied to the umbilicus]. The other day, [a man whose] dysentery is already gone, was cured with that [treatment]. For red dysentery, drink *jamaica* (*Hibiscus sabdariffa*, Malvaceae), soak the *jamaica* in boiled water, add sugar, and drink throughout the day (*como agua al tiempo*). *Jamaica* is cold, [so] when the dysentery is from heat it goes away. *Manzanilla* (*Manzanilla recutita*, Asteraceae) is for diarrhea, it's also good when [the diarrhea] is from cold. *Quelite de burro*, this *quelite* one goes to cut [leaf] by leaf (not the whole plant), one grinds it and cooks it and eats it. When one has diarrhea this *quelite* is good and one eats it, with tortilla or by itself. When one has diarrhea, quickly it goes away." "What kind of diarrhea is *quelite de burro* good for?" "*Quelite de burro* (*Manihot rhomboidea*, Euphorbiaceae) is for green or yellow diarrhea. Green diarrhea is cold. Yellow diarrhea is hot, they say."

Chronic diarrhea is attributed to cold and to fright, so hot herbs are used. A sitz bath from the waist down with *yerba buena montéz*, in the afternoon, before going to sleep, is for "diarrhea that doesn't heal," and for swelling of the knees and for fright. *Tintallo* (*Hyptis suaveolens*, Lamiaceae), *yerba buena montéz* (possibly *Ocimum* sp., Lamiaceae) and *flor de florifundio* (*Brugmansia candida*, Solanaceae) are boiled together for "fright, swelling, diarrhea that doesn't heal, and for illnesses for which one can't find a cure."

*Santa maría* (*Tanacetum parthenium*, Asteraceae) is for diarrhea from cold, and for cold in general.

The red color of *Hibiscus sabdariffa* (Malvaceae) flowers suggests use of this herb when blood is present.

*Yerba de cangrena* (*Tournefortia densiflora*, Boraginaceae), usually used externally for infected wounds, was also mentioned for diarrhea, "as there is an infection inside."

Bark of *ciruela* (*Prunus* sp., Rosaceae) is boiled alone or in combination with barks of *agaroble* (*Acacia angustissima*, Mimosaceae), *cuaolote* (*Guazuma ulmifolia*, Sterculiaceae), *guamucho* (*Pithecellobium dulce*, Fabaceae) for diarrhea.

*Cirsium subcorianum* (Asteraceae), *cardo santo*, **kitse' kualo**, **kitse' nga'a** (red thorn), **kie nga'a** (red flower) was used for both hot and cold diarrhea but the preparation in each case was different. The boiled root was indicated for cold, "pure white," while the fresh mashed root was for heat, "pure blood." For "white dysentery" (cold diarrhea) the flower is also boiled as a tea. The entire plant is boiled and used as a bath for swelling.

Of the thirty-six plants mentioned for diarrhea (Table 3.3), I estimate at least twenty are commonly used. In addition to plants for diarrhea, two plants were mentioned as anti-helminthics, to expel intestinal parasites. Root of *epazote*, *Chenopodium ambrosioides* (Chenopodiaceae), and the toxic seeds of *tololote* (*Andira inermis*, Fabaceae) were used to treat intestinal parasites. In contrast to diarrhea, constipation was rarely mentioned as a health problem. I have only two references to plant use specifically for constipation in my field notes. The fresh root of *yerba santa* (*Piper auritum*, Piperaceae) is crushed in water and drunk for constipation. The other reference to constipation appears under "Fever and Heat" above.

**Table 3.3: Medicinal plants for diarrhea.**

*agaroble*, bark of (*Acacia angustissima*, Mimosaceae)  
*anis* (*Pimpinella anisum*, with *yerba buena* (*Mentha x piperita*, Lamiaceae) for cold diarrhea)  
*bule* (*Lagenaria siceraria*, Cucurbitaceae), leaf for *limpia*  
*canela* (*Cinnamomum zeylanicum*, Lauraceae, with *yerba buena* (*Mentha x piperita*, Lamiaceae) for cold diarrhea)  
*cardo santo* (*Cirsium subcorianum*, Asteraceae) (cold and hot diarrhea)  
*cinco negritos* (*Lantana* sp., Verbenaceae)  
*ciruela* (*Prunus* sp., Rosaceae), bark boiled alone or with other barks  
*clachicón*, boiled root (unidentified)  
*cuaolote* (*Guazuma ulmifolia*, Sterculiaceae)  
*cuapinol* (*Hymenaea courbaril*, Fabaceae, boiled fruit including large seed)  
*lengua de perro* (*Elephantopus spicatus*, Asteraceae)  
*lengua de vaca* (*Buddleia* sp., Buddleiaceae)  
*florifundio* (*Brugmansia candida*, Solanaceae)  
*guamucho* (*Pithecellobium dulce*, Fabaceae)  
*guayaba de costoché* (*Psidium guajave*, Myrtaceae)  
*guayavillo* (unidentified)  
*huichicate* (*Xanthosoma robustum*, Araceae)  
*jamaica* (*Hibiscus sabdariffa*, Malvaceae, for hot diarrhea)  
*laurel* (*Litsea glaucescens*, Lauraceae)  
*malvarisco blanco* (*Waltheria indica*, Sterculiaceae, *Sida abutilifolia*, Malvaceae)  
*manzanilla* (*Matricaria recutita*, Asteraceae, for cold diarrhea)  
*manzonzapote* (unidentified, Sapotaceae)  
*nanche* (*Byrsonima crassifolia*, Malphigiaceae)  
*naranja* (*Citrus sinensis*, Rutaceae), leaves  
*ojo de pájaro* (*Sanvitalia procumbens*, Asteraceae)  
*quelite de burro* (*Manihot rhomboidea*, Euphorbiaceae, for cold/green and hot/yellow diarrhea)  
*remedio de san pedro* (*Eryngium globosum*, Apiaceae)  
*ruda montéz* (*Indigofera miniata*, Rutaceae)  
*santa maría* (*Tanacetum parthenium*, Asteraceae, for cold diarrhea)  
*sarsa* (*Mimosa* sp., Mimosaceae)  
*tintallo* (*Hyptis suaveolens*, Lamiaceae, for cold, chronic diarrhea)  
*yerba buena* (*Mentha x piperita*, Lamiaceae, alone, or with *canela*, *Cinnamomum zeylanicum*, or *anis*, *Pimpinella anisum*, for cold diarrhea)  
*yerba buena montéz*, (possibly *Ocimum* sp., Lamiaceae, for cold diarrhea)  
*yerba de cangrena* (*Tournefortia densifolia*, Boraginaceae, for internal infection)  
*yerba de empacho* (*Verbena* sp., *Lippia* sp., Verbenaceae)  
*yerba santa de culebra* (*Piper (Pothomorphe) umbellata*, Piperaceae)

### ***Malpasa de Hambre (going hungry) and Empacho***

*Malpasa de hambre*, skipping meals or going hungry, "when one doesn't eat on time," may cause *latido*, a pulsing pain in the abdomen (see "*Latido*" below), abdominal pain or other illnesses. Apparently *malpasa de hambre* can cause illness in two ways. First, weakness from extended hunger and skipped meals can make one susceptible to illness and *latido*. For example, a twenty-eight year old teacher complained of contracting frequent sore throats and common colds when he skipped meals.

Secondly, eating after going hungry for a long period is considered to cause gastrointestinal distress, such as diarrhea and *empacho*. "[When you] *malpasarse de hambre*, if you eat you get diarrhea." *Empacho* is typified by abdominal fullness, nausea, vomiting and diarrhea, "when the food doesn't feel good, stomach pain." "*Empacho* is when one eats too much and one's stomach aches." According to the Chatino, *empacho* is always preceded by *malpasa de hambre*. "*Empacho* is when one *malpasa de hambre* (skips meals) and doesn't eat on time. That damages, injures only the stomach, the stomach growls (*grita*) a lot or one gets diarrhea." "*Empacho* is when one *malpasa de hambre* and then eats a lot."

One woman prescribed seven herbs for *empacho* and *malpasa de hambre*, invoking the power of a sacred number in addition to the effect of the herbs: root of *cinco negrito* (*Lantana* sp., Verbenaceae), *guamucho* (*Pithecellobium dulce*, Fabaceae), *yerba de empacho* (*Verbena* sp., Verbenaceae), *guayaba bark* (*Psidium guajava*, Myrtaceae), *nanche bark* (*Byrsonima crassifolia*,

Malphiaceae), *cuaolote* bark (*Guazuma ulmifolia*, Sterculiaceae), and burnt tortilla, "a little of each" boiled and drunk for three consecutive mornings. With the exception of *yerba de empacho*, commonly used singly for *latido* and *empacho*, the remaining medicinal plants in the formula are specifically for diarrhea. A tea of boiled root of *lengua de perro* (*Elephantopus spicatus*, Asteraceae) is taken for vomiting and *empacho*.

*Empacho de agua* is similar to *empacho* caused by food. Both manifest as diarrhea caused by ingesting water, or food, respectively, in excess, after a period of abstention. Similar herbs are prescribed, suggesting that these conditions are viewed similarly from a diagnostic perspective. "*Empacho* [comes] from drinking instead of eating." "*Empachado de agua* [is when] one has thirst, goes to the *monte*, [and] drinks a lot of water that isn't boiled, [the water] stays stuck in the mouth of the stomach, and when one moves [from sided to side] the water makes a sound. For this bark of *garoble* (*Acacia angustissima*, Mimosaceae), bark of *ciruela* (*Prunus* sp., Rosaceae), bark of *guamucho* (*Pithecellobium dulce*, Fabaceae) and bark of *prelillo*, leaf of *guayavillo* (unidentified), boiled together, mixed, a little of each, together in a pot, put up to boil. Let it cool a while and drink it half and half [neither hot nor cold], then one drinks it. Five minutes after drinking, massage with the stomach with pig lard, three [consecutive] mornings one drinks it."

"What I suffered is wanting to drink too much water, but that is the *empacho* that they say. For *empacho* one cures with only this bark of *cuaolote* (*Guazuma ulmifolia*, Sterculiaceae), drink one cup of this tea in the mornings, drink this tea very hot until the throat burns, as much as one can bear, and with



this it's gone. It's not from heat, but from when one drinks cold water before eating, this is what gives us the illness, before breakfast, they say. That's when one gets sick in the stomach. The stomach gurgles, and one wants to drink more and more, and one doesn't feel like eating tortilla, only pure water one wants to drink."

### ***Latido***

*Latido*, **ti'i nde kuää**, *dolor que brinca*, (**ty'i nde kuää ndë në jiä**) is the physical symptom most frequently mentioned by the Chatino. *Latido* refers to a painful pulsing in the abdomen. The precise location of the *latido* varies, with pain situated in the general area of the umbilicus, **kyilityö nä**, sometimes slightly above, below, or at the umbilicus. The pulse felt is the abdominal aortic pulse. Three commonly cited causes of *latido* are 1. heat due to anger (*muina*), 2. weakness due to malnutrition, and 3. skipped meals or going hungry (*malpasa de hambre*). *Latido* may be acute or chronic. Medical doctors often diagnosed cases of *latido* as internal parasites, usually treated with an anti-helminthic such as albendazol. Patients often complained that they had taken anti-helminthic medication repeatedly but still had *latido*.

### ***Rising Latido***

Sometimes *latido* is described as rising in the body (*me sube el latido*). I suspect rising *latido* refers to nausea. One teacher explained that rising *latido* referred to dizziness (*mareo*) and "people can't say exactly where they feel pain." A woman in her mid-twenties drank parsley for lower abdominal pain. "I have a pain inside." "Is it *latido*?" "Yes, it's *latido*, and the pain goes up to here

[epigastric area, midway between the xiphoid process and the umbilicus] and up to here [throat and shoulders] for one year."

A twenty-one year old man, who later underwent surgery for a hiatal hernia described his pain, "All the *latido* went up to my head, giving me a vision, it looks like lights. Boiling, my stomach."

A forty year old woman complained of symptoms over the last six years, "Sometimes my head is dizzy, sometimes for the same pain I have my stomach hurts." Her left upper back and upper arm hurt. Her tongue was pale with many fine horizontal fissures and a thin white tongue fur on the right side. Her right pulse was slippery and full, especially in the stomach position. "What's wrong with your stomach?" I asked. "*Latido*, and from that my head is dizzy. I drink only herbs for *aire* sometimes, *pitona* (*Lippia alba*, Verbenaceae), *ruda* (*Ruta graveolens*, Rutaceae), *ajito* (*Allium sativum*, Liliaceae)."

A forty-one year old man described what appeared to be migraine headaches with nausea. "I felt my vision large like this, every fifteen-twenty days this *latido* would rise up in me (*me sube*) and I felt very [much] this ache in my head." "Do you feel nauseous (*basca*)?" Yes, pure nausea, but a dry nausea, as if I'm going to vomit but nothing comes out, that's what it does to me."

### ***Latido and Debility***

The experience of physical illness is often accompanied by fear. For the Chatino, *latido* is a common source of fear and concern. "*Latido* doesn't let one eat, one loses appetite. When the illness gets worse, they get weaker and don't have strength." *Latido* can be a sign of a worsening condition.

I was curious to know if the Chatino had any tonic herbs to strengthen the body or the blood like the Chinese. When asked, one older woman answered, "There are herbs for *latido* when one is weak." *Latido* is a main symptom of weakness and failing health. A younger woman, thirty-three years old with seven children ages three to sixteen, miscarried four months prior to our meeting. I asked if she had *latido* in addition to her complaints of headache, upper back (T-5-6), chest, rib and flank pain, feelings of heat, and not being able to stand covers or blankets except after a bath. She replied, "I'm tired (*me da sueño*), tired, tired, I am." Though she did not have *latido*, per se, she replied in the affirmative, which I paraphrase, "Yes, I am weak."

Another woman, introducing the use of *Hyptis* sp. (Lamiaceae) for *latido*, began, "Also when one is weak, when one is woozy (*desmallado*), they put it here on the umbilicus. It's name is *reindita* (*chocolatillo*, *Hyptis* sp., Lamiaceae)" And in yet one more example, "Why does one get *latido*?" I asked. "Because one is weak, I think, because one is weak, because there is nothing to eat."

A fifty year old monolingual Spanish speaking woman from Zenzontepec complained of dark spots all over her body. "I get woozy, once I felt dizzy, [I have] *latido*." "How long have you had *latido*?" I've had *latido* almost my whole life. Sometimes I get (catch, *agarra*) a back ache, and my calf [hurts], my bone hurts," she shows me her lower leg, "sometimes the dark spots burn (*arden*) inside. She complained of a "recent" single episode of stomach ache with dizziness and vomiting seven months earlier. The anterior half of her pale tongue had deep fissures. The tongue had very little slightly yellow fur. The tongue tip was reddish and indented with a miniature heart-shaped bump. Upon seeing her

tongue, I asked her if she suffered from insomnia. She couldn't fall asleep until 1-3 a.m. and rose at 5-6 a.m.

She had been treated by a sucker of objects who also gave her "injections" for a brief episode of Bell's palsy that lasted five or six days. The healer removed glass and spines that he said were from "*maldad* and *chaneque*." Her husband, commented sarcastically on the curer's injections, "I think [he gave shots] just to sell the medicine, vitamins, I think." The woman continued, regarding *latido*, "When one is sleepless (*se desvelan*), doesn't sleep, [it] jumps when one wakes up, [then] it's from heat. There is [*latido*] from cold too. When the feet get cold, the heat rises to the head. One drinks bitter so that the heat descends, because one never applies a hot herb [to the abdomen]." "One never puts hot herbs here?" "No, only cold things."

Justino, who was obese, explained, "*Latido* comes from debility, because of anger (*muina*), but when one is weak. I never have *latido*, where am I going to lose [my fat]!"

Egg white and earth are mixed in a small hole in the ground with a stick or teaspoon (also applied to the umbilicus for hot type egg yolk colored diarrhea, mentioned earlier) and "when one is weak, woozy, they put it here on the umbilicus." From prior examples we can infer that here is another reference to *latido* from debility.

According to Werner (1980: 23), *latido* should more aptly be called hunger and is a symptom of malnutrition and resulting debility. As we will see below, hunger is only one cause of *latido*. Debility associated with *latido* may well be due to malnutrition, "when there is nothing to eat."

### ***Differentiation of Latido***

When I once directly asked if the Chatino recognized hot and cold types of *latido*, one man said, "No, all *latido* is hot." Not all agreed however. A sixty-three year old woman distinguished between hot and cold *latido*, "There is *latido* from heat and *latido* from cold. *Yerba buena* (*Mentha x piperita*, Lamiaceae) [is] for cold pain of the stomach." "*How do you know that it's a cold pain?*" "Because when one drinks cold it gets worse and if one drinks hot for the pain, then one knows it's a cold pain."

Specific cases support the Chatino's differentiation of *latido*. A twenty-seven year old woman nursing a seven month old infant complained of *latido* for six months and recent upper back pain. Her husband attributed *latido* to "bodily weakness or not eating well." The *latido* came and went, worsening when she was tired. *Yerba buena* (*Mentha x piperita*, Lamiaceae) tea provided temporary relief from *latido*, then the pain returned. A doctor prescribed aspirin. After receiving an acupuncture treatment from me the *latido* disappeared for three days. *Yerba buena* is a hot herb for cold disorders. Women's physical warmth is depleted after childbirth and their wombs are "cold," so *latido* in this case might be of a deficient and cold type. *Latido* is a sign of weakness, whether of a hot or cold nature.

### ***Muina, "Heat," and Latido***

*Muina*, anger, is associated with the liver. Anger inflames the liver, and liver dysfunction in turn causes heat symptoms to manifest. Headache and bitter taste in the mouth are oft cited heat symptoms of *muina*. *Muina* is commonly

associated with *latido*. When *latido* is from *muina*, the *latido* is hot in nature. "*Muina* (anger) is the cause of many illnesses: headache, loss of appetite, then *latido* begins." Chest pain can be a symptom of *muina*. Tooth abscess is another sign of *muina*.

A twenty-five year old mother of a five year old who presented with *latido* looked much older, maybe forty. She complained of tender painful breasts that exuded yellow milk for two years. She attributed the onset of illness to anger, "It started with a *muina*, an anger (*coraje*), with a soft pain here." She pointed to the upper right quadrant of her right breast. The center and sides of the distal third portion of her tongue were covered with red spots. She had a headache at her temples and stomach pain after eating and in the afternoons. Lower abdominal pain accompanied her periods. For one and a half years she menstruated every two weeks. The last six months she bled only once a month. She had pain in both forearms and her right knee. Her pulse was deep and thready (fine). Her anger was due to her husband's infidelity. The mistress had spread rumors that the woman herself was sleeping around, which infuriated her even more.

"When one has *muina*, you want to talk to someone, so that it goes away, so that the *muina* ends, the anger (*coraje*) that one has. There is a woman that treated me badly, I also mistreated her, and I told her things so that my *muina* would end, *pues*. "And if you don't talk [to the person] then you get sick?" "Then it remains inside, and for that also they say that the *latido* comes, because of the *muina*."

A woman asked me what to do for her drunk husband. She said she suffered *latido* daily, "because of the *muina* that I have, he treats me ugly [does

terrible things to me]. Sometimes he gets drunk and sleeps, but he does very ugly, he hit me and sent me to the ground and I hurt here," she pointed to the side of her head, "for several days. Since I married him when I was fourteen years old he drank, but more [then], everyday, now less. One child grabbed him when he was like that, he looked for his gun, his knife, and I hid it [the gun], that's why he hit me." She took *sávilá* (*Aloe* sp., Liliaceae), which gave her some relief (above).

A sixty-eight year old woman with a history of alcoholism complained of right elbow pain for six months, and chronic low back pain in the L-2 (second lumbar) region. She had bitter taste in the mouth, borborygmus (gurgling stomach), and *latido*, which she described as "*muina latido*." She was often tired, easily angered and complained of feeling hungry. Her pulse, especially on the right side, was weak. Bitter taste in the mouth is a symptom of "heat," while *muina* is both symptom and cause of "heat."

### ***Cold Bitter Medicinal Plants for Heat and Latido***

Many different herbs, often cold (*frescas*) and bitter, are used for *latido*. Herbs may be taken internally or applied externally in poultices. External treatment for *latido* is common. Mashed herbs are applied to the umbilicus, **kyillityö nä**, described as *el ombligo* and *el estómago* (the stomach) in Spanish by bilingual Spanish speakers, or **nane** (abdomen) in Chatino. "In the umbilicus all the nerves are united and there the herb transmits the cure inward." Fresh herbs mashed and crushed in cold water are often used for hot disorders, as fresh herbs are "cooler" than cooked herbs, and cold water more "cooling" than hot. Bitter herbs are also indicated for *muina*, **nyä xië'yü**, anger, a common cause of *latido*,

and are believed to affect the liver, which is adversely affected by heat produced by anger.

*Chocolatillo*, **ndatë' kuitë'**, or **ya teje' kii** (tree salt grass), the bitter young shoots of *Hyptis verticillata* (Lamiaceae), are mashed (*se refriega*) in cold water and taken internally for *latido*. Some filter the water with a cloth before drinking. One of many Spanish names used for *Hyptis verticillata*, *chocolatillo*, refers to the the chocolate colored foam that results from mashing the herb in water. *Moco de guajolote* refers to the hanging inflorescences that resemble a turkey's pendulous comb. *Reindita* is another Spanish name for this plant. One woman recommended leaves of *Hyptis verticillata* applied externally to the umbilicus in acute conditions, "when one has *latido* one can't bear, and one makes with one's hands like this." She demonstrated the restless discomfort and flailing about of a person in severe pain. *Chocolatillo* is also indicated for *muina*, **nyä xië'yü**, anger, a common cause of *latido*. For *muina*, to relieve the heat in the head, some douse the head with the aqueous fresh herb mixture.

Another bitter herb often used for *latido* is *hwaretero*, or *barretero*, **kyishe tlä'ä** (herb bitter), **kyishe jlyä**, *Calea urticifolia* (Asteraceae). The leaves are rubbed and mashed in cold water and applied externally or drunk. "One rubs until foam comes out and one drinks it three mornings." Sometimes *C. urticifolia* is mashed (*molido*) in alcohol and applied externally to the umbilicus.

*Tronadora*, **ya kie ki'e**, (*Tecoma stans*, Bignoniaceae) is a major cold bitter herb for *latido* abundant along roadsides. The new shoots are ground in water and taken internally or crushed, sprinkled with *mezcal* and applied externally to the *latido*. *Mezcal* is also considered "cold." Some use the flower of



*tronadora* boiled and drunk for cough and whooping cough. Some are familiar with the common Mexican usage of the boiled leaves for diabetes. Leaves of *Tecoma stans* are also used as a sudorific for fever, finely chopped, sprinkled with mezcal, then wrapped around the feet and over the liver area with a large leaf such as *Xanthosoma robustum*, *Ricinus communis*, or with cloth, "until [the *tronadora* leaves] turn black, dry, yellow, are burned."

*Verbena* (*Verbena* sp., Verbenaceae), also bitter and common along the paths, is drunk mashed fresh with a little water for *latido*.

The hot bitter leaves of *estafiate*, (*Artemisia mexicana*, Asteraceae) are boiled in tea for *latido*.

The root of *ruda montéz* (*Indigofera miniata*, Fabaceae) is taken internally for *latido*.

*Hoja de paraíso* (*Melia azederach*, Meliaceae) is used for *latido*. "I got severe diarrhea [after taking it], it must be very cold."

The crushed young shoots of *limón* (*Citrus aurantiifolia*, Rutaceae) are beaten with egg white or whole egg and applied externally as a poultice to the *latido*. Sometimes the root of the lemon tree is crushed with water and taken internally for *latido*. One man described the relief felt from taking crushed lemon root in water, "I felt somewhat good, somewhat cool in the stomach."

The root of *coyúl* (*Begonia* sp., Begoniaceae) is mashed and applied to the *latido*, to the umbilicus. A large handful of the ground root is also taken internally, mixed with water. The root of *coyúl* is very "cold." Petioles of *coyúl* are used as food.

The seed of *caoba* taken from a grapefruit sized fruit is used to treat *latido*. [Not collected. The dictionary identifies *caoba* as the mahogany tree (de Gámez, T. N.D.: 1021), possibly *Swietenia humilis* (Meliaceae) (Mabberley, D.J. 1990: 564).] The seed is removed, ground and drunk "*fresco*," in cold water. The dosage used is one or two seeds per one cup of water, for two, three or several days until a cure is achieved.

*Fresno*, (not collected) a cold tree with yellow flowers, is used for malaria, deafness, *latido* and diabetes. For deafness, a piece of wood is heated in the fire and the exuded juice is put in the deaf ear.

*Maguey de sávila*, *Aloe vera* (Liliaceae), "one puts up to boil, in the afternoon it's boiled, one cup, no more, of juice of aloe, one cuts half of the leaf [lengthwise] very finely in the afternoon. At night one leaves [the open dish of boiled juice] in the night dew or one puts it on top of the house and by the next day before eating one drinks it. Seven mornings, one hour after drinking it, one doesn't eat anything." "Who taught you this?" "One teacher taught me this remedy." "And did it help you?" "Yes, a lot, because [the *latido*] used to hurt me a lot, but since then, drinking it, it helped me alot." The woman who described this cure had *latido* from *muina*.

In Tataltepec, the underground part of *Cissampelos pareira* (Menispermaceae) is boiled to make a tea for *latido*. One cup of tea is taken in the mornings before eating, "warm or cooled, [but] cold is better, until [the *latido*] goes away." About 45 cm, or about three 15 cm. roots are boiled in a water.

Herbal emetics are sometimes used to rid oneself of *latido* and abdominal pain. Bitter herbs not usually emetic, may cause purging when used to treat acute

gastrointestinal symptoms. *Yerba maestra*, *Artemisia mexicana* (Asteraceae), often taken as a soothing tea for *muina* and *latido*, and *chocolatillo* (*Hyptis verticillata*, Lamiaceae), a common tea or poultice for *latido*, had emetic effects in two separate accounts. "Yerba maestra, when one has a colic pain, a pain like when a woman is going to have a baby, an ugly pain, boil yerba maestra in water--he couldn't stand the *latido*---boiled a little bit---he vomited everything and the pain was gone." A teacher told how he had eaten spoiled oranges and was doubled over in pain along the road. An older man passed by, saw his plight, and gave him some *chocolatillo* to chew. The teacher vomited, fell asleep by the roadside, and awoke feeling relieved.

#### ***Non-herbal Cures for Heat and Latido***

Application of a cake of clay (*torta de barro*) to the painful area is a common non-herbal treatment for *latido* from "heat." A form of massage in which the whole body, arms and legs are squeezed is sometimes used to treat *latido*.

A curer spoke of his medical training with his uncle, "When one [woman] had *latido* [my uncle] sent me to get a stone from the river... He says even the stones are medicine."

#### ***Hot Medicinal Plants Used for "Cold Stomach" and Latido***

*Garañona*, *kuityi karaño*, *Croton ciliatoglandulifer* (Euphorbiaceae), commonly used in hot baths for edema and swelling, can be taken internally as a tea for symptoms of stomach or abdominal pain due to skipped meals (*malpasa de hambre*). "Se quita la bola en el estómago, it gets rid of the lump in the stomach."

The "lump in the stomach" refers to *latido*, as the pulsing painful area has a palpable lump. Unlike most bitter "cooling" plants used for *latido*, *Croton ciliatoglandulifer* (Euphorbiaceae) is warming and taken in a warm tea. This suggests *latido* from skipped meals is cold in nature, unlike *latido* from anger that is "hot."

The older woman who distinguished hot and cold types of *latido* recommended *yerba buena* (*Mentha x piperita*, Lamiaceae) for "cold pain of the stomach." "If the *latido* is from heat, one drinks another class [of herb] that the Mixtecs sell named *manzanilla* (*Matricaria recutita*, Asteraceae)." *Manzanilla* is used throughout Mexico for stomach ache and is considered hot by most Mexicans. *Manzanilla* is not grown in Zenzontepec. Leaves of *aguacate*, *Persea* sp. (Lauraceae), stored dry in the house eaves, are boiled in water and drunk for cold *latido*. Avocado leaves are also commonly used for *mayugón*, bruises and contusions.

"For stomach pain we use *yerba dulce* (*Lippia* sp., Verbenaceae), *orégano*, and *pimiento* (*Piper nigrum*, Piperaceae) when it's from cold, since *orégano* (*Lippia* sp., Verbenaceae or possibly *Origanum* sp., Lamiaceae) and *pimiento* (*Piper nigrum*, Piperaceae) are hot." "How do you know if [the pain] is from cold?" "First one drinks cold things and if that doesn't feel good, one drinks hot things... *Canelilla* (*Montanoa xanthiifolia*, Asteraceae) is hot, for stomach pain or when a woman is going to give birth. *Santa maría* (*Tanacetum parthenium*, Asteraceae) is for cold things, when one has cold."

## ***Muina***

*Muina* is the expression of frustration that arises from interactions with vindictive neighbors and indifferent outsiders. "*Muina*," said M., a sixty-two year old woman, regarding her visit to the clinic medical student. According to M., the doctor hid when they arrived at the clinic. *Muina* is the overt expression of frustration and anger. Vengeful anger leads to reprisal and gives rise to fear in all who encounter the resulting violence. Fear and anger are closely intertwined. Anger can lead to fear and fear to anger (Fisher and Ury 1983: 30). Murder and violence are common occurrences that bring high drama to village life.

One man described the social interaction that leads to anger. The person experiencing *muina* is first the victim of a neighbor's hostility, and again the victim of her own anger. "[With] the *muina*, one feels hot and desperate (*desesperado*), and heat, heat, one has, and one doesn't have consideration [for others]. If you speak rudely to me and then I say 'Calm down, don't talk to me like that anymore,' that's *muina*. When there's *muina* there's heat, and the head gets hot and doesn't let up."

In the West, anger is often viewed as indicative of an external problem, relationship or situation, in need of resolution. For example, righteous anger resulting from injustice motivates social action to bring about social change. In Chatino society, the anger of injustice is seen as harmful to the person experiencing the anger. Anger is as much symptom as cause, and treatment is sought to restore harmonious social relations. "He beats me, then he goes to the hillside to bring me herbs for *muina*."

Unexpressed *muina* will cause illness. We believe that if you keep it here," Justino said pointing to his chest, "[*muina*] will cause illness."

Interpersonal balance can be restored by expressing anger to the offending person directly. Internal balance can be restored through the intake of herbs. Fire and sun are the causes of heat of anger, and so the imbalance in nature is propitiated and restored through prayer and ritual.

Certain foods can cause anger (*coraje*). "Eating too much avocado causes anger, but a huge anger, bigger than *muina*." "It's not good to eat a lot of bitter, (bitter) causes anger." "It's bad to drink chocolate or eat avocado with cheese when one gets angry, the [blood] pressure rises." As proof of the effect of food on illness, I was told how one girl who had the measles, another hot condition, ate avocado and cheese and subsequently got diarrhea and vomiting. (see section on foods as cause of illness, under hot-cold.)

Tío Justino and his wife both felt the flare-up of my scabies was due to my *muina*. I had been to the clinic to see the resident medical student. The resident treated me as poorly as he treated the Indians, telling me I was dirty and needed to bathe. Despite my reluctance, heeding a friend's insistent urging and concern, I went to him again for a blocked ear duct. The resident refused to examine my ear and we left the clinic in disgust. Justino and his wife said I should have "grabbed the doctor and pulled him up by the tips of his ears, from the hair above his ears, not from the hair at the top of his head." They said this is what they do when they are angry. Their seven year old son was especially enthusiastic in describing how it was done. Justino appropriately dubbed the doctor "*Tío Frijol*" (Uncle Bean), and suggested I put mother's milk in my ear, obtainable from a nursing mother

who owed me a favor. I followed his advice and my ear was clear the following day.

"Diabetes comes from *muina*, from anger (*coraje*)." Justino said he had *muina* for three days when he felt heat and thirst, and diabetes was diagnosed. He said, "Diabetes also comes from eating too much sugar, like the American evangelist missionaries who eat everything too sweet."

"When one gets angry (*se amuinan*) when it's hot [outside], that heat of the sun grabs hold and one loses appetite, gets sick and weak."

"When someone gets angry (*se amuina*) that *aire* stays inside." The speaker's daughter had two big *muinas*, when she couldn't grind her masa which then left her hungry.

"What does one say here, when there is bitter taste in the mouth?" "Here they say heat, headache, and the mouth is bitter because of anger (*coraje*)."

Toothache and abscess are symptoms of *muina*. C. said a *piojonillo*, which she described as a pocket of pus under the skin that can be accessed from either end, "you don't see this [type of abscess] anymore," on her index finger, was from a *muina* she had because some woman wouldn't eat the food C. had given her. **Sön yakuësu**, *camote de loma*, root of *Dorstenia drakena* (Moraceae) mashed with beef lard is applied externally to cure *piojonillo*. C. said her father cured her with purple onion, beef lard and *copal* resin fried together and tied to her finger with a leaf of *espina quintonil* (*Amaranthus spinosus*, Amaranthaceae).

"Or sometimes we get a sudden pain too, a *muina* pain, a toothache, from the *muina* we get toothache, and also (for that) he places the hand like so in the mouth. Or also [for] *muina* pain [from] when one gets angry in the fire, for that

[reason] one takes the pulse, one divines what illness one has." "Placing of the hand" here refers to laying on of hands by a curer in order to heal. The Chatino differentiate heat from anger by the location in which the anger occurred, by the cooking or fire or outdoors under the midday sun.

The curer took his wife's pulse and said, "Heat of *muina*." "*How do you know she has heat of muina?*" I asked. "[The blood] flows like foam, pure foam flowing."

One man, T., explained how his skin fungus was due to *muina*. Some twenty years ago the community was going to pay a lawyer to help them regain communal lands involved in a land dispute. When the collected funds to pay the lawyer disappeared, people blamed T. They tied his hands and kept him in a house, to be hung the next morning. Someone came in and freed him. T. fled north, to Mexico City, then north to Sonora. He returned a month or so later, when emotions from the incident had cooled. After this incident he developed a skin fungus.

Anger can adversely affect a nursing mother's breastmilk, which can then cause infant diarrhea. "Diarrhea that dirties white, has a white seed, a little somewhat short seed, like a short ball, is from *muina*, the mother gets angry (*se amuina*), then give [the infant] oil of San Sebastian."

Sadness and anger are two emotions that often go hand in hand. Beneath anger one often finds hurt and with hurt, anger is often also present. "And others told me that it was *muina*, that I cried a lot and that was the *maldá* (evil) that I had." A mother wanted me to treat her ten year old son, " [He's] sad, *muina*."



Chest pain is another symptom associated with *muina*. "Aren't you affected by *muina*?" a curer asked a twenty three year old woman. "Yes, my chest hurts." I had treated the same woman the previous day and asked her if she had chest pain. "Yes, when I get angry (*me da coraje*), but otherwise no."

### **Bilis and Muina**

*Bilis* is the synonymous term for *muina* commonly used in other areas of Mexico. In the Central Valley of Oaxaca, where both terms are used, *muina* refers to the anger that causes *bilis*, and *bilis* to the associated symptoms such as bitter taste in the mouth. In Zenzontepec *muina* refers to both the cause and the related symptoms. Chatino Spanish speakers, for the most part, were not familiar with *bilis*, and asked me what it meant when a traveling herb vendor promoting his miraculous and expensive wares used it over the loudspeaker on a fiesta day. Only several curers who had spent considerable time outside the community used the term *bilis*.

A Chatino curer used the term *bilis* in a case of what appeared to be chronic hepatitis. A twenty-eight year old man complained of gas pain extending to his upper back and head and dizziness for eight months. His conjunctiva were flecked with brown, "My eyes itch sometimes, my stomach jumps a lot, [my skin] jumps, [and] trembles even though I'm not nervous." His stool was white, and he often felt an urgency to defecate with little product. "It's stopped up inside," he said. "The curer diagnosed and advised, "He has *bilis* spread throughout, it makes the whole body bitter. One has to vomit, one has to cry, because if not, the illness won't go out."

The next day we saw another patient together, suffering from alcoholism, of which the curer said, "I see that his liver is bad, [he has] *bilis muina* like the other, but more advanced. He drinks a lot, sometimes he doesn't sleep all night [because he is drinking]."

### ***Herbs for Muina***

The extremely bitter root of *yerba de muina* (*Stevia connata* and *S. ovata*, Asteraceae) is boiled in water and taken internally, one root per day, "when one has *muina*, a lot of anger (*coraje*), and bitter taste in the mouth." "Good for *latido*, when one can't fall asleep because of *muina*."

A humble and knowledgable healer accompanied me to the top of Cerro Neblina. As my teacher and I neared the sacred cave atop Cerro Neblina, he stopped to pick white *yerba de muina* (*Stevia connata* and *S. ovata*, Asteraceae) flowers. He carried his bouquet into the cave and placed the flowers at the feet of San Juan, the Chatino St. John the Baptist, a large moist stalagmite beside a pool of water. White flowers are often used as offerings for the saints. My teacher's flowers were also a personal prayer to heal his anger.

A pinch of dried *verbena del cerro* (unidentified) is taken in tea for *muina*.

*Nyashite*, *pastorcita* (*Bidens odorata*, Asteraceae, and an unidentified Scrophulariaceae), is crushed fresh in water and taken internally for *muina*, anger (*coraje*) and nerves. (See hot -cold section for more on this herb.)

*Pitiona*, *Lippia alba* (Lamiaceae), commonly used for *aire*, is considered cooling, and is used by some for *muina*.

### ***Vergüenza***

*Vergüenza*, **tu ju'u**, shame or embarrassment, is an overwhelming feeling, like anger or grief, that can cause illness. *Vergüenza* is seldom mentioned by the Chatino, perhaps because the emotion of shame is less common or less acceptable than anger. Anger is harder to hide and affects social relations, so people may more readily admit to anger than shame, an emotion that may go unnoticed by others when experienced. *Vergüenza* usually causes sudden diarrhea.

"*Vergüenza* also causes illness. I'm going to tell a story that happened to me. I was eating in a village over there by Santa María [Tlapanoquiahuatl], with a cart of clay, and a girl in front of me saw how I was [eating]. She lifted [my bowl], as I was drinking beef [stew] from a large earthenware bowl, and afterwards I got a strong diarrhea, but strong." His wife added, "He got rid of it with *yerba buena* (*Mentha x piperita*, Lamiaceae) I believe."

The fresh root of *lengua de perro*, **kitse ndee jñë'**, (*Elephantopus spicatus*, Asteraceae) is ground, mixed with water, strained and the fresh liquid is drunk, "when one is grabbed by vomit and diarrhea from *vergüenza*, and with that they get better. There are people who get *vergüenza* while they are eating."  
"There are people who say, "I was embarrassed (*me vergonzé*) and are lost."

## **MALDAD**

*Maldad* means maleficence, inclusive of evil and evil acts. *Brujería*, sorcery, and *maldad* are often used interchangeably. Where *maldad* is a cause of illness the two are synonymous. *Maldad* also refers to any deliberate, malicious, vindictive action by one person against another. Acts of vandalism are therefore *maldad*. *Maldad*, whether a vindictive act or witchcraft, is always inflicted by a person with evil intent. The perpetrators of *maldad* are invisible, making *maldad* an appealing solution to conflict. Through *maldad*, anger is veiled and direct confrontation is avoided. In Spanish, the Chatino seldom say *maldad*. *Maldá* and *maldado* are the common colloquialisms that I retain here.

*Maldad*, sorcery, is revealed by admission, through dreams and divination. Itching in the nose or throat, described as tiny worms, is another sign of *maldad*. Uterine bleeding and bladder infections are also attributed to *maldad*.

When illness persists and becomes chronic, *maldad* is suspected. One nineteen year old mother of two suffered from asthma that began during her second pregnancy three years earlier. She complained that cinnamon tea made her hoarse. I asked, "And what do you say to explain why illness comes?" "Some say it's from a *maldado*."

However, sudden illness and death are just as likely to be from *maldad*. "I. was killed by witchcraft. [I.] killed a *brujo* and [then] another *brujo* bewitched him." I's daughter told me her father "died of sudden vomit and diarrhea, from one day to the next he died."

*Maldad* can be associated with hot symptoms such as anger, and urinary tract infection, or with cold, as when one dreams of the dead. "And others told me it was *muina* (anger), that I cried a lot and that was the *maldá* that I had." "When one sees a dead person in one's dreams they say that is *espanto de agua* (fright by water)."

### **Maldad and Envy, the Root of All Evil**

Envy, *envidia*, is the root cause of *maldad*. Social relations in small villages are strained as individuals compete for resources. Evil is personal and personified by one's neighbors. People envy each another's perceived abundance and hard work. I asked why so many illnesses and events were attributed to *maldad*. "Because people say there is a lot of envy, a lot of *muina*."

"God couldn't be doing this to me, and I work hard. [It] must be envy---so who did this to me?"

"I worked a lot [so] I caught *maldad*, bloody urine."

I asked Justino why people do *maldades*. "People have books. I have a book of dreams." He looked at me intently and his voice dropped, "Because of envy." He paused, "And when they fight. It's very secret, very secret."

"There are people who don't talk to one another when they pass on the road."

I asked a relatively well-off woman in her fifties if she thought about *maldad*. She said, "Yes, a lot. I'm afraid, afraid. Is it also like this in your village?" She was even afraid to say the word *maldad*. "What is [*Hydrolea*

*spinosa*, Hydrophyllaceae] for?" "You already know." "What do you use it for?" "For that," she said, referring to the ineffable.

One man expressed reluctance to have me as his house guest, explaining that people would accuse him of benefitting personally, rather than the community as a whole. "My neighbors are very fierce, there is a lot of envy."

People seek the expertise of a curer-sorcerer, someone "who can do *maldad*" to assist them in carrying out their evil intent. "One man did *maldad* to him. Someone else had asked [the man to do *maldad*]. Because of envy over a woman he went looking for a man who can do *maldad*."

Three non-natives, *albahaca*, (*Ocimum basilicum*, Lamiaceae), *sávila* (*Aloe vera*, Liliaceae) and *ruda* (*Ruta chalapensis*, Rutaceae) have special powers against evil and witchcraft. "*Albahaca* has virtue against evil. One puts it in a flower vase on the table for friendship so a lot of people will come visit. When one has envy or *muina*, one plants a sprig of *ruda*, a sprig of *sávila* and a sprig of *albahaca*." *Muina* (anger) is the natural consequence of envy that leads to violent and vindictive acts, *maldad*.

### ***Maldad* as Vandalism and Violence**

Vandalism, like witchcraft, is the consequence of envy and *muina*, and is an invisible, covert aggression. Aggression can be minor, as in the releasing of a burro's tie, or can escalate to theft, armed robbery, or even murder.

The godfather to a wedding couple described events at the couples' engagement dinner. "People came to do *maldad*, to throw rocks, because the girl is pretty, because of envy, that they can't have that girl. Two guys went out with a

shotgun and shot two shots to scare them. I didn't shoot because my bullets are large and might kill someone."

Justino's children were harvesting maguey leaves (*Agave angustifolia*, Agavaceae) for fiber extraction when they left their unfinished work and their tools in the field overnight. After the maguey leaves are harvested and their spines removed, the leaves are baked in a dugout pit to detoxify the irritating juice before further handling. The leaves are then split into small strips with a bone tool prior to retting. The children had not yet finished preparing the strips when they left. "They did *maldad* to us. All our stripped maguey was thrown into the *monte*, it was already [too late] and couldn't be recovered." The machete and hoe were also stolen. On another occasion, they complained that their donkey had been freed from his tie. Another man found his nursing donkey untied, her udder slashed and a large pole stuck into her vagina.

A well-to-do Chatino woman in Tataltepec suffered from right-sided neck pain for twelve years. "Not forty days after my first son was born my hair got caught in the mill. I think someone put my braid into the mill." From the day her head was yanked she suffered sudden twinges of pain.

A man lost a bull and asked many people to divine for him. "I went to another man who told me the bull isn't [alive] any more, that it's been a while since the bull hasn't been [alive], that is to say, someone ate it, and he told me that above my house where there is a spring of water, right there is the one who did it to me. I asked him what his name is. He said he can't tell me, but that he's a thin fellow, tall, and then I realized that it had been a month since I went to the fiesta

on February 15th in Jamiltepec and three or four days later after I returned I couldn't find the bull and I realized who did it to me."

Murder is a common means of resolving disputes. A common way to disempower the victim is by first getting him drunk. Once a teacher was made to drink, then taken outside the village near the cemetery, and killed with a machete. Some said "for a woman," and others, "for envy" because he was a teacher, and had a steady cash income. His wife found his body parts scattered about and dogs eating them.

People are still killed because of suspected witchcraft. "F.'s son came here, '*Compadre*, they're going to kill me,' he said. He cried a lot. Before they killed him the fox (*costoche*) stood up [right] here and screamed." "Weren't you afraid?" his daughter asked. "All my hair stood on end. His wife was from another village, then she had a field here, and also worked there, both. Four people came to kill him, one was the father of J." "Why did they kill him?" I asked. "Because he was," he crossed himself. "Because he was a sorcerer?" "Yes. They didn't kill him in the house. They went to wait for him on the path. They went there, where he went to clear his field, to wait. I was also on that side when he passed walking. I heard the shot that killed him. I went by another path, I was afraid they were going to kill me too. Later J.'s father died, that's how we know they are sorcerers, because of the grandfather, *vaya*. But don't tell anyone."

### ***Maldad* Accusations**

Accusations of *maldad* were common, as *maldad* was often the suspected cause of illness. "The *brujos* (witches) make figurines (*monos*)," Justino suddenly



and forcefully grabbed a cloth to show me, bunching it up in his hands with an angry intensity, "and put in needles, and hit, and put chile so that it burns, and garlic too. There are books," he stressed the word "books," "of sorcery, and there are those who buy them and use them."

### ***Maldad* Revealed by Admission**

People themselves admit to *maldad*, which is one way of confirming suspicions. "We know *brujos* because when someone gets drunk he says, 'I'm going to do a *maldad*,' that's how we know that person is a *brujo*."

On our way to Zenzontepec once in the rainy season, we were forced to stop several times en route to dislodge huge boulders that had fallen onto the road. Everyone on the bus pitched in to tackle the boulders with branches as levers and pushing. "*Maldad*," one woman whispered. That night, in the village, I asked Justino why such events are considered *maldad*. "People say 'I'm going to put rocks or sticks on the road' when someone is going to travel. 'I'm going to do *maldad* to him,' they say."

One evening, I started to speak jokingly about *maldad*, how everything here is *maldad*. But *maldad* is no joking matter, and in fact is the source of much pain, illness and conflict, even death. Suspected sorcerers are killed. In answer to my joking, Justino immediately related another case of *maldad*.

"A man in his fifties fell in front of E.'s house, on the path, there is nothing there, no rocks, nothing, and broke his back, his neck. His arms and legs were left paralyzed, twice they operated on him in Oaxaca. He lived a month, couldn't open his eyes, mouth. He died six days after returning to the village. He fell on

the night of Christmas day, on December 25th, 1992. Once before he got drunk, he took out his machete and went to hit the son-in-law of F.'s daughter-in-law. She's from [a certain village] and probably got another *brujo*, not F. After he died, she said, 'I killed him.' She bewitched him to get revenge for him coming to kill her son-in-law. From her mouth it comes out."

### ***Maldad* Witnessed**

First hand accounts of *maldad* leave little doubt that witchcraft is practiced. "My uncle died and later they found a wax figure (*mona*) on the roof under the thatch. He had a cross of razor strop (*afilas*) across his chest and in the straps [were] figures of wax. On his back was a ball of human excrement." I related this conversation to the man's brother, who then told me, "We burned the figure. It had a lot of spines in its right arm and a lot of things in its head."

*Maldad* practices often involve death and cemeteries. A man told me he had seen someone burying something under the main cemetery cross after a funeral. He told the widow, and together with her, dug up a doll that had been buried there. Dirt from a cemetery, if brought to someone's house, will cause misfortune to befall them.

In a house that had experienced a death, I was told someone had come to ask for a stub of a funeral candle, presumably for witchcraft. "What else would he want it for?" Some days later, a man confided to me that he himself used to do witchcraft. I asked him if it was bad when someone asks for a candle from the dead (*vela de difunto*). He said it wasn't necessary to have a candle from the dead, that any candle stub (*cebito de vela*) sufficed.

### **Maldad as Worms**

Several people told me about the worms that witches drop into one's eyes or nose when one is resting unsuspecting in the field. These worms cause itching in the nose and throat, and cough. Here are two accounts.

"There is a little herb on the mountain, a little tuber for 'cough of one meal (*tos de una comida*),' like a hair that touches, [that] seems like an animal. They brought me a worm [and put it] in my eye, and it seemed as if my nose was itching. Then he prayed for me, one *tabaco* (tobacco, *Nicotiana tabacum*, Solanaceae) with *mezcal*, [with] that he wrapped my throat and prayed, and did it not go away afterwards? We have this worm a lot. It enters by way of the eye, goes down to the nose, and comes out the throat. The cough is like a hair from a worm. My brother also knows [about] this worm."

Witchcraft is often only implied by the reference to worms. B. attributed her six year old cough to fright by water and *espanto de arma* (fright by firearms), to *cuerda*, and general debility, "my body is bad." "I itch here," she said pointing to her throat, "as if there were a lot of worms here itching in the gullet."

### **Maldad and Dreams**

Dreams are a commonly cited cause of illness. Dreams inform of *maldad* and are the way in which *maldad* can enter the body to bring sickness. Just as prayer heals at a distance, so evil thoughts sent by a neighbor or sorcerer can invade one's dreams to manifest as illness.

The old man claimed to be eighty-nine years old and suffered from acute pain in his right elbow. The pain was aggravated by machete work, disabling

him. "I dreamed pure dead people, my legs swelled, my whole body to my head because of the cold that grabbed me. They say envy, *maldad*. There are people that buy books and do *maldad*. They don't like me in [a certain village]. I lived there fifteen years, here is my granddaughter, here lived my grandparents, my mother, for that I live here."

Dreams of eating are signs of witchcraft. "T. dreams that he is eating anything, eating a live snake. He has itching in his throat. They say that there is envy."

Justino firmly believed he was the victim of witchcraft, which a curer had confirmed by sucking out objects. "Dreams of the dead are always bad, always cold. I dreamed that dogs were biting my legs, that I was being gored by a bull, of a rotten stinking corpse in the cemetery, that's how I know it's *maldad*, sorcery. Dreams of airplanes are bad, it's an *aire*. Dreams of cars are bad. Dreams of snakes are bad. Worms coming out of the nose like A. had twice are from *maldad*. When you dream ugly like that you have to pay masses to the ancestors. We did everything already."

A woman related a dream, "A dead person with flowers threw off his *petate* (palm sleeping mat), rose up and began to run after me." Someone present said, "*Brujería*." I asked why everything is attributed to *maldad*. Her husband explained, "Because the people here say there is a lot of envy, a lot of anger."

"Sometimes when one is sleeping a sudden pain grabs us, *tyi'i ue sä' jnyä*, a pain that attacks us later, [the] pain of a dream. *Tyi'i kyäla'*, pain of a dream grabbed me [causing me] to sprain [my wrist], *yu kuä yane ya'a* (wrist)."

An obese woman suffered from cough with wheezing for two months that began with a common cold. "I dreamed ugly, that I drank something ugly. V. burned *copal* for me, cleansing me over the fire." V. charges five [pesos]. For the dream he brought three candles for me, because I dream very ugly, all sorts of things. He told me that I dreamed that I am eating all sorts of things. I dreamed that my mother who is dead told me to eat squash leaves and since then the cough began. [V.] told some man with a toothache but no cavities '*calor del sol* (heat of the sun).' He prayed a lot and, of course he cured him." "When did [V.] come to treat?" "Just yesterday he came.

"The *curanderos* (curers) say that when one is frightened in the river we get a strong cough, and from the fire also, the same. I feel heat, and can't cover myself at night. And the dream takes us to the place where we were frightened. How did it happen? Here in the gully one man tried to grab my hand, and my *muchacha* (girl) who was with me was frightened. I ran and in the night I dreamed that there in the gully three men... My little girl went to leave tortillas [to bring lunch to her family working in the fields] and one fellow was hiding, he grabbed her *rebozo* (shawl). From this fright I got a bladder infection. Years ago I suffered a lot from bladder infections, about eight months. I went to [a certain village], my brother gave me an injection. It got infected, swelled up and didn't work. One man came down to the house with two girls, dressed in white, dressed like St. John. He blew [*mezcal*] on me, all over he blew on me. [Because of] his [white] clothes I thought I was going to die. T. gave me a shot of penicillin. After that I got better.

"Here there are also *brujos* (witches) that are out to get us (*nos buscan mal*), they give us the illness that we can't get rid of." "Do you know *brujos*?" "There in La Concha one man told me to carry money for him and I didn't want to. And did he not bewitch me with this? My mother came to me in a dream and touched me like a man, and I woke up with a pain." she covered her abdomen with her hands, "strong, and with that a hemorrhage started, blood came out. Eleven twelve days I was [bleeding], and a man came and cured me. He gave me *mezcal* with two eggs to drink. He prayed in the doorway with two candles. And did I not get better with this?" The *aire* of sorcery enters the body and is revealed in dreams. Dreams of the dead, *kyala' chojo'o*, are cold in nature. "They say that dreams that one is eating are because someone is doing *maldá*. That's how the *aire* enters the body." "Aire, *kuë'ë shala*, *aire* of dreams." "That is to say *maldá*?" "It's bad. Someone is speaking to the dead person so that he will give us to eat."

"**Kuisëë** (dreams) [are] an *aire* that grabs people." "What *aire*?" "Aire of the world. [For example, **kuisëë** is] when there is abdominal pain, a woman has *hemorragia* (uterine bleeding, metrorrhagia), [bleeding that is] not the period, or *mal de orina* (bladder infection). **Kuisëë** (dreams), of dreams, a thing that the woman dreams that she is having sex with a man that already died, cold grabs [her], that is **kuisëë kyala'**, *aire* of dreams." Another man joined our conversation, "**Kuisëë buru** (dreams of donkeys), there are women dream they are making love with a burro, that is very bad, she bleeds a lot. **Le jlala**, very bad. I dreamed that I was alone on a cliff. That's how one dreams when one isn't going to recover, that one walks alone at night."

Dreams of eating are a sign of *maldad*. Dreams of eating meat are a sign of imminent death, usually of a distant relative. "I dreamed I was crossing a river, that I was speaking to dead people and they were giving me meat to eat. I dreamed I walked on a bridge over a river."

Before his brother fell and subsequently died, J. dreamed that he and his brother "were walking drunk, lost, had lost the path in the *monte*. Then a road appeared, but we still couldn't get out. Then I got out and he stayed behind." ("Drunk" means sad or anxious from excessive thinking and worry. See "*Aire* associated with the head.")

I had heard so many bad dreams, I wondered if there were ever any good dreams. "Dreams of flowers are good. Dreams of a head full of lice are good, [they mean you] will have lots of money."

### ***Maldad as aire***

One meaning of *aire* is sorcery, *maldad* or *brujería*, a consequence of interpersonal conflict. *Aire* (also *kuë'ë jnä'ä*, evil *aire*, and *kuë'ë shala*, *aire* of dreams) is often used as an alternate term for sorcery, but *aire* has many other meanings as well. Pain from *aire* is a moving unfixed pain. Justino also refers to the moving nature of pain from *aire*.

"The symptoms present in a form of *aigre* like pains, aches, pricks, like a rare pain that is *aire* from the people, that is *maldá* (maleficence)."

Clarification I sought for *aire* and its multiple meanings was not always forthcoming or apparent. The best way to understand the following passage is as a string of analogous, additive terms. In this description, *aire* is both a moving

pain, and one inflicted by an evil sorcerer. "It sticks me, from one side to the other, it leaves from here and comes to here, the pain moves." "Then they say *aire*?" "It can't be an injury, since it goes from one side to another." "*Aire of maldá or aire*?" "*Aire of maldá, aire of the people. Aire of maldá of the people. Evil aire, is a class of evil aire, kuë'ë jnä'ä (evil air). Sorcery is kuë'ë jĩĩ kuitsä'e, sorcerer's aire.*" Another way to understand the passage is that *maldad* is a class of *aire*.

A woman asked if her daughter-in-law's condition wasn't from "*maldado* from someone, an *aire maldado* (evil *aire*)." The daughter-in-law was also concerned, "Did the people not give me *aire*? [In] Cofradia, Quinicuena, Piedra Grande, there the people fight over land."

Sorcerers can inject objects into the body that can be removed by curers who specialize in *chupa* or sucking. In the following passage, the language employed to describe the danger these objects pose is reminiscent of the language used to describe *aire*. The specific words that connote *aire* are underlined. Children are especially vulnerable to *aire*.

A Mixtec curer treated Tío Justino twice, for the hefty sum of NP\$50 (US\$17.00). A day's wages are NP\$5.00 or US\$1.70.) each time. "She removed spines, nails, bits of glass, many things. She blew with *mezcal*, she sees that there is something under the skin, it's incredible. The others pray, but she [does it] with pure force (*fuerza*). Then she burns everything. I felt very good after the treatment, after she sucked." He said he could see the skin raised and then lie flat again after she sucked out each object. Only his wife and mother were present. "We don't let the children see this, so the things *won't strike them* later."



In Mesoamerican curing rituals (*limpias*) for fright, *mezcal* is often blown from the curer's mouth onto the patient. In Oaxacan Valley Zapotec curing rituals (*limpias*) for fright (*susto*) I witnessed, *mezcal* is typically blown onto the nape of the neck, face with eyes shut tight, and chest. The low back and abdomen may also be included. Object intrusion by witches is a common belief, not restricted to Mesoamerica. Objects such as spines, bits of glass, maize kernels, small pieces of bone, nails are removed by the curer by sucking. The curer's mouth is usually directly applied to the patient's skin, the object withdrawn from the patients body by sucking and then spat out from the curer's mouth.

*Maldá* is used both in the sense of *aire* as sorcery, and in the sense of *aire* as generated by anger. A twenty-five or twenty-seven year old mother of two children, ages twelve and nine, with a history of *ataques* (attacks, epilepsy), suffered from irregular menstruation, abdominal pain and *latido*. "Some people from Yucundó (in the Mixteca) told me it's *maldá*, it's because my mother-in-law doesn't like me. And others told me it was *muina* (anger), that I cried a lot and that was the *maldá* that I had."

"**Kuitsä'e**, one has sorcery." "*How does one know it is sorcery?*"

"Sometimes one gets a sudden pain or an *aire*, or a cough here in the throat, it is **kuitsä'e** (sorcery) also."

In some cases, the herbs taken, as well as the symptoms mentioned, suggest *maldad* and *aire* are sometimes the same. A fiftyish woman took herbs for *aire* in alcohol: *ajo* (garlic), *yucundó*, *guaco* (*Aristolochia variifolia*, Aristolochiaceae, see Martínez 1944: 268-276, 318), *yerba de aire* (*Hydrolea spinosa*, Hydrophyllaceae), *ruda* (*Ruta chalapensis*, Rutaceae). She complained

of leg pain and spasms, cold and pain in the low back and sacrum radiating to the abdomen. She had headache in the eye region. She said she had *hemorragia*, that her period lasted four days but the bleeding was excessive. *Hemorragia* is a sign that sorcery is implicated.

### **Divination of *Maldad***

Seeds of *ndjiaa jo'o*, *Santa María* or *yedra* (*Ipomoea tricolor*, Convolvulaceae) are used to induce a vision to determine if *maldad* is the cause of illness, and to receive guidance on how to treat. Chatino from the coastal areas of Juquila and San Juan Quiahije, ingest *Psilocybe* mushrooms, in order to divine *maldad* and find lost objects (Greenberg 1989). In Tataltepec both *Psilocybe* and *Ipomoea tricolor* are used.

The dosage for seeds of *ndjiaa jo'o* is one *maquila*, the amount to fill the square that forms in a cupped palm. A *maquila* is a cubic measure for lime, grain, a quarter of a peck. The same term is used in this other context. The dosage is therefore proportional to the size of the person. The seeds are ground with water and drunk. Two people are usually present, the person taking the seeds and the person assisting. The person accompanying prays.

"Anyone can give [the seeds]. Only that they know how to pray Hail Mary (*Diós de Santa María*). One takes the seeds at nine at night, and goes to sleep. Only the other person stays awake to listen to all that the person [taking the *yedra* seeds] says. In the morning one gets the runs. *Chilemoya* (chili paste) is eaten in the morning, to stop the effect of the *yedra*. [One takes the *yedra* seeds] in order to dream things. A lot of people take it. E. takes it, but he also drinks a

lot [of alcohol]. My aunt took it. [One takes it] in order to know if it's *maldad* or something else. They say that the seeds talk. It's a drug, isn't it?"

"My father told me that *Santa María* advises when one can't take it anymore. Sometimes one trembles, that's why I think [*Santa María*] is cold. From a distance one hears musicians approaching and playing, my father told me the musicians come playing, that's how [the vision] begins. People accompany the person who drinks [*Santa María*], to hear what the person says. One gets drunk from it if one drinks it."

A woman from Tataltepec seeking advice for her toothache took *Ipomoea tricolor*, here called *frutitas de la virgen*, s'yu jo'o (literally, 'fruit of the gods'). In her dream-vision a Chatina woman dressed in an *enagua* (traditional skirt) appeared to her and said, "From something of nothing you will be healed."

One man from a village pertaining to Zenzontepec described his experience taking *honguitos de San Juan*, (St. John mushrooms, *Psilocibe* sp.) "I ate fourteen *parcitos* (pairs), which are twenty-eight mushrooms. After about a half hour I began to have visions." He was hoping for some insight regarding a bout of sciatica which had disabled him and kept him from working for eleven months. "First I heard thunder, like thunder of a rainstorm. A man with a sombrero approached, then disappeared. I heard musicians playing, a crying baby, many cattle running, and a barking dog, and I [was there] with my lasso. The crying baby was a message that I was going to have children. The first six years of marriage I had none. Then I had one child, then none for many years. I went to pay, to give a *promesa* in Juquila, in the church, and my wife got pregnant again."

Later, he related the scenes of his vision in more detail. "In the first vision I felt like crying from sadness. Then, in a second vision, I felt a moving joy, a joy as if one is content from something one does, like that. A moving joy, one can say it like that, no? In the third vision I heard a voice. In every vision I had, I heard thunder, like rain. Alright, then in the third vision I heard voices like very big dogs barking and a stampede of animals, cattle, mules and cows, like bovine. I felt that I was standing among [the cattle] with my lasso on my shoulder and a rifle, but [I was] excited by these animals. As a fourth vision I felt as if I heard a voice or thunder, because in every vision I heard thunder. In the fourth vision I heard or saw a man with one of those huge *mariachi sombreros* and cowboy boots. And then, everytime I tried to talk with him he disappeared. But after that I felt like, how do they call those who sing with the children, I felt like a, those aren't the pastors, what are they called? I felt like a choral director of religious songs and children's choir, and then I heard the crying voices of very young children.

"It thundered again and the vision ended because I woke up, because it was an hour or more than an hour that I had heard each vision. Then when the cock crowed the vision left. But I was left crazy, like disturbed, as if a week had gone by. That's how it was, because I was half craaaazy, that's how I felt. Like my thought was sort of quiet, didn't function like when one is thinking well, as when the mind is working. It seemed I didn't think about eating or working or anything. That was the result of the hallucinogenic mushrooms."

Pine and tobacco are burned to divine maldad. A man confided to me that he used to recover lost objects for people. He also consulted a woman who

burned cigarettes. She advised him on his lost bull. "There it is, I don't know if it's sick, but it's in only one place. There it is, it doesn't seem sick, but it's in only one place. Go back to your house, because there it is." When he returned home his neighbor had found the bull with the rope stuck, which is why the bull was "in only one place." Another time he lost a bull and asked many people to divine for him. "One man told me, 'Those with [fortune telling] cards cheat. Do you think anyone can divine?' Then he told me how to do [divination], 'Burn a stub of *ocote* (pine) and then it would be revealed to you."

### **Cures for *Maldad***

Ritual cures for *maldad* are similar to cures for *espanto*. Cures always entail prayer and a ritual. "I know a fellow that was sick, he was very sick. Years went by and he didn't get well, until one man cured him. He prayed, he said that it was *maldad*. He blew *mezcal*, he covered him very well, and the next day he was fine, healed, that it is to say he cured him of *maldad*. One man did *maldad* to him, someone else had asked [the man], because of envy over a woman, he went looking for a man who can do *maldad*."

### **Sucking of Objects, *Chupa***

Suckers of objects (*chupadores*) are renowned for their specialty. Few people have this ability, and the demand for their services is great. I heard several accounts of one curer's work, from both the fervent and skeptics. The curer in this case was a monolingual Spanish speaker from the Chatino region. Another sucker of objects was Mixtec. To my knowledge, no Chatino speakers specialize

in sucking of objects. The traditional Chatino curers in Zenzontepec diagnose by the pulse, and treat with candles, prayer, and laying on of hands with their breath.

"He did sucking and injections," the wife began her account of her treatment for unilateral facial paralysis. "*What kind of injections?*" (Early in my fieldwork I still tried to elicit information about the pharmaceuticals people were taking, but answers were seldom forthcoming. For the most part, people had no idea what medication was being administered or why.) "Vitamins, I think." "I think only [so he could] sell the medicine," her husband interjected mockingly, expressing his annoyance at the high cost of the injections. "He treated me two days after the illness started, and three or four days later it healed. He took out spines and glass. He said it was *maldad* and *chaneque*." (*Chaneques* are spirit guardians of places. See section on '*aire as chaneque*.) "*Where did he learn to do this?*" "From someone in Yucundó, a Mixteco."

#### **Herbs to Cure Sorcery (see *Aire*)**

*Camote de zopilote*, a poultice of mashed root is applied where one has "sorcerer's pain."

Boiled *yerba de sueño* (*espinilla*, *yerba de sapo*, *yerba de aire*, *yerba de espanto*), *kitse' kuisëë* ('dream herb') (*Hydrolea spinosa*, Hydrophyllaceae) is used for bathing, and taken internally as a tea for "when one dreams ugly" and for *maldad*. *Hydrolea spinosa* is indicated for "swelling or inflammation of the body and feet, liver or stomach infection, nightmares and fright, itching and to ease childbirth."

*Pitona*, **kiunu' kuachi'**, (*Lippia alba*) is taken as a tea for *aire* and *maldad*.

The fresh root of *yerba de brujo*, *Acourtia bravohollisiana* (Asteraceae), is mashed and drunk before breakfast, "when one dreams that one is bitten by a rabid dog, or a dead person, or that one is eating meat. Three four mornings before breakfast (*en ayunas*), one handful [of root] is crushed on a rock, then with another rock the water is squeezed out. Better this *yerba de brujo* [than *espinilla*, *Hydrolea spinosa*, commonly used for dreams] when an *aire* grabs hold. I worked a lot, [so] I caught *maldá*, bloody urine."

The fresh leaves of *mocoxiana* (*Ageratina tomentella*, Asteraceae) are crushed in water or boiled to make a tea. Two women took me to collect *mocoxiana*. "When [a woman's] stomach stays bad with a lot of cold after having their creature (giving birth). It's bitter." She drank *mocoxiana* "with *cuachanalá* [probably *Amphipterygium adstringens*, Julianiaceae (Linares et al. 1990)], but there isn't any [*cuachanalá*] here. Sometimes I send for some. Two points (*puntitos*)," she broke a branch to show me the size of a *puntito* of *mocoxiana* (*A. tomentella*), "and one piece of *cuachanalá*."

The second woman added, "For *gusaõ* (worms), [when] the nose itches." "From little worms (*gusanitos*)?" I asked. "Yes." "From witchcraft?" "Yes. For abdominal pain, [pain] of the stomach, [women] get the violent runs (diarrhea), when one goes outside and it grabs us strong after giving birth."

Herbs for *aire* are used to treat bad dreams as well. "For *aire*: *cedrón* (*Terminalia catappa*, Combretaceae), *ruda* (*Ruta chalapensis*, Rutaceae) taken

singly in tea, *pitona* (*Lippia alba*, Verbenaceae) taken in tea with *chichicaxtle* when one dreams ugly and [has] sorcery, *ajo* (*Allium sativum*, Liliaceae)"

### **Humor and *Maldad***

Although Justino was often extremely serious, almost ominous, when the topic of *maldad* came up, sometimes we could joke about *maldad* too.

Justino and his wife said they would do witchcraft so that I don't come back. They laughed uproariously when I asked if they were doing witchcraft to cause me to itch. Justino's wife said, "We'll put a heap of chiggers on the doll." "Drag it through the weeds," I said. Justino added, "Put red spots [of scabies on it]." They laughed over and over.

### **ANTOJO**

One's own craving of a desired object can cause illness, much as one's *muina* (anger) adversely affects oneself. In Zenzontepec, where scarcity and malnutrition are common, food can be a source of craving. *Antojo*, whim, fancy, also called *chibo* (possibly related to *chivo*, goat), is a craving for a particular food upon seeing the food without being able to satisfy the craving. Skin blotches matching the color and shape of the desired food develop as a result. These blotches, discolorations or growths disappear when the food craved is identified, heated, eaten, and applied externally to the blemish.

One man explained, "One takes note if, [for example,] a slightly red blotch on the hand looks like *chicharrón* (pork cracklings) [then] one heats, eats, and applies [*chicharrón*], or if [the blotch] is in the shape of bread, [then] likewise. For example, one *antojo*, [that looks] like beef can be from when someone went



to Oaxaca and had the desire to eat beefsteak and didn't eat, then [the blemish] came out." I asked what food L.'s brown splotches on both her calves looked like. Someone said, "Like *morunga* or pork fillings, pork blood, L.'s is like that." The man added, "The belief doesn't matter, what matters is that the problem (*mál*) goes away."

*Yerba de antojo* is also used to treat antojo. Although I was not able to collect *yerba de antojo*, I mention this plant as yet another example of the way plant use intersects with virtually every medical concept.

## **AIRE**

**Kuë'ë**, *aire* or *aigre*, as it is often pronounced, is air or wind, often of a malevolent nature. *Aire* is a frequently cited cause of illness in Mesoamerica. Kearney (1972) entitled his book "The Winds of Ixtepeji," using *aire* as a metaphor for the ever present maleficence, distrust and envy that exist in Mesoamerican social relations. *Aire* is the broadest illness category or concept. I have therefore covered various aspects of *aire* under each of the terms to which it can refer. *Aire* can refer to external wind, such as cold wind that can cause the common cold (see "cold *aire*" under hot-cold), to a "wind" that is generated by heated argument that can also cause illness (see "*muina*"), to fright (see "*espanto*"), to *chaneque* (see "*chaneque*"), and to the evil *aire* inflicted by jealous neighbors or by a sorcerer (see "*maldad*"). *Aire* is usually associated with the head, insanity, dizziness and seizures, as well as wandering (moving, unfixed) pain.

The Chatino speak of being struck or grabbed by *aire*, which often comes suddenly, "*shiga'ne*, where the *aire* struck me," "**kuë'ë jlya ngatu jsüna** (*tsüna?*), *pegó el aire*, the *aire* struck." One knowledgeable Chatino speaker gave an analogy from the plant world to explain *aire*, "[*Aire* is like] *chauistle* (rust, probably *Tilletia foetida* or *T. caries*), the plague hits, one gets sad, yellow, like a plant with the plague, one gets like this, with tiredness."

### ***Aire* as Ataques, Seizures, Convulsions and Epilepsy**

*Aire* refers to epilepsy, which seems to be unusually prevalent in southern Mexico. Lead poisoning from ceramic glaze is one possible cause of epilepsy.

Blows to the head from falls or physical violence, and alcoholism are other possible causes.

"*Alferecía* (epilepsy) [is when] a person who is sick with *aire* gets drunk and falls, but not from alcohol (drunkenness). They get *ataques* with foam in the mouth and fall. One bathes with *albahaca* (basil, *Ocimum basilicum*), and rubs it on the whole body with *mezcal* after bathing. One boils it and bathes with it. Two or three times one bathes, several times."

A father introduced his fourteen year old son who had epilepsy since age five, "*aire*, we say." During the boy's first seizures he would stand still. Later on he began to fall. His tongue stayed in place. Since he once cut his head with the tip of a machete while cutting wood, his parents keep him away from metal. He named herbs for *aire* they had tried: *luís perez* (*Pluchea salicifolia*, Asteraceae), *yerba de la bandolera*, *albahaca* (*Ocimum basilicum*, Lamiaceae), *ruda*. Each plant was applied singly, as a bath prepared from the ground fresh herb. There were more: *tisana de tela* (collected, not identified); *tecomachiche* (a small bitter gourd, Cucurbitaceae), taken internally; *pitona* (*Lippia alba*, Verbenaceae), in a bath prepared from the fresh herb. *Guaco* (*Aristolochia variifolia*, Aristolochiaceae), *yucundó* and *espuma del mar* were freshly ground together in water, which was used to bathe with and drink."

"Seven herbs, *yucundó* with *ruda* (*Ruta chalapensis*, Rutaceae), *almendra de cedrón* (*Terminalia catappa*, Combretaceae), *guaco* (*Aristolochia variifolia*), *estrella del mar*, *gota coral* (red coral, *Corallium* sp.), *paeonia* [are] for *aire*, *ataques*. A little bit of each herb is ground, mixed with *mezcal*, and applied to the

whole body and drunk. A child drinks the powder with water, and an adult with mezcál."

Convulsions from fever are also considered *aire*. A young child with cerebral palsy was treated for *aire* with seven herbs: *yucundó*, *guaco* (*Aristolochia variifolia*), *ruda*, *estrella del mar*, *gota coral*, *almendra de cedrón* (*Terminalia catappa*, Combretaceae), *peonia*. These herbs are purchased in Oaxaca or from traveling Mixtec vendors, with the exception of *guaco* (*Aristolochia variifolia*) and *almendra de cedrón* (*Terminalia catappa*, Combretaceae) which grow locally. The herbs are "ground and mixed with *mezcál*, and *almendra de cedrón* (*Terminalia catappa*, Combretaceae) is scraped into the mixture. The child is given the powdered herbs in the mouth with water, and for an older person, with *mezcál*. For *aire*, when they have *ataques* (seizures) and fever like that child gets, and with these I treated him."

Fainting episodes are also considered *aire*. A twenty-two year old man, married with one child, had been ill for six months. He spoke and walked slowly, supported by a cane, his head wrapped in a bandana. Someone said, "If he doesn't wrap [his head] he faints." He trembled slightly and was sweating profusely from his face and nose although a cool breeze was blowing. His nails were extremely long and dirty. "Why don't you cut your nails?" I asked. "It harms me. I got fever once when I cut them." "Do you have any pain?" "Yes, in my heart, here, and it pulses, *kuēkuēkiē*, as if my heart were moving." He had a hard abdominal mass which was painful when pressed.

The father spoke for the sick young man, "He spent twenty days with a curer who gave him many herbs for *aire* with *mezcál*, applied [externally] and a

little to drink, with prayers for *espanto* (fright). He didn't walk at all, since then he began to walk. He feels numb in the head, he doesn't hear what is said. He carried a corpse that died of cholera, [and] for fear of getting [cholera] he didn't eat anything, didn't eat all day. Afterwards, his cousin fought with another and [the other guy] cut his cousin's finger. [My son] went home and saw [his cousin] very weak because of the blood that he lost, and [my son] went behind the house and fainted. *Váguido* we say, *kuë'ë* (*aire*). Fright by lightening fell very close to him, and that fire, the heat of the lightening, penetrated inside him."

The most urgent conditions may also be attributed to *aire*. Herbs for *aire* are used as first aid for medical emergencies such as convulsions, seizures and shock. *Aire* is greatly feared, for it can lead to death. Justino's thirty-three year old sister died from *aire*. "She got an *aire*. She got *ataques* (seizures), epilepsy."

"What is good for *aire*?" the wife asked. "When the eyes close or when they go up toward the top," the husband explained. "When the eyes get blackish, or the vision," she added. "They move, the eyelids get blackish." "Or isn't it the pupil that hides, so that only white shows." "*Ruda* (*Ruta chalapensis*, Rutaceae), with *mezcal*, or without [*mezcal*] if there is no time, or *pitona* (*Lippia alba*, Verbenaceae) or *guaco* (*Aristolochia variifolia*, Aristolochiaceae), *yucundó*, all these remedies are mixed." The husband stressed the need to hurry, "One can crush the herbs without *mezcal* if there is no time."

### ***Aire* Associated with the Head**

Symptoms associated with the head, such as dizziness, are indicative of *aire*. "It seems that *aire* is grabbing hold of me. My head gets drunk, I lose my

head (senses) for a few moments when I take a few steps." She took herbs for *aire*: *ruda* (*Ruta chalapensis*, Rutaceae), *albahaca* (*Ocimum basilicum*, Lamiaceae), *pitona* (*Lippia alba*, Verbenaceae), *yerba buena* (*Mentha x piperita*, Lamiaceae), *yucundó* with *camoreal del cerro* (probably *itamoreal*, *Geranium* sp., Geraniaceae).

"Drunk" (*borracho*) refers to a feeling of disorientation, as in intense grief. Maffi (1994) mentions a similar expression used by the Tzeltal Maya in Chiapas. However, she understood drunkenness to refer to the consumption of alcohol that takes place at funerals. The Chatino specifically told me that "*borracho*" did not refer to alcoholic drunkenness, but "you wouldn't understand that." "*Borracho* (drunk) means sad (*triste*), when one thinks a lot. [I had] it mostly when [my brother] was sick. I was with him a lot in Oaxaca [in the hospital] and I couldn't eat, like a drunk."

"My back hurts, my arm, sometimes my head is dizzy, sometimes for the same pain that I have my stomach aches." "*Did you fall?*" "No, I only hurt." "*How long?*" "Some six years ago it started like this." I felt her pulse and found her stomach pulse to be slippery and full, indicating a digestive problem in Chinese medicine. "*What's wrong with your stomach?*" I asked. "*Latido*, and from that my head gets dizzy. I drink only herbs for *aire* sometimes, *pitona* (*Lippia alba*), *ruda*, *ajito* (*ajo*, garlic)"

"*Ruda* for *aire*, *mezcal*, *guaco*, *yucundó*." "*How does one know one has aire?*" "One vomits and if it's *aire* our head gets dizzy and one begins to vomit yellow, yellow, it will be very bitter."

## **Aire as Madness**

Madness, *locura*, **nyatē tōndo'** (crazy person, from Spanish *tonto* ) is considered a manifestation of *aire*. "There are people who are crazy (*tonta*) with *aire*." The same person recommended herbs for *aire*, many non-native or not found locally, "**yukundó**, with *albahaca* (*Ocimum basilicum*, Lamiaceae), *pirú* (*Schinus molle*, Anacardiaceae), *canfor* (*Cinnamomum camphora*, Lauraceae) *nuez mezquillad* (*nuez moscada*, *Myristica fragrans*, Myristicaceae), *puma de mar* (*espuma de mar*), *crimostaza*, ground in warm water or *mezcal*."

An *aire* in the form of a dog caused temporary insanity in one woman. "A dog passed a woman, touched her clothing. She became crazy. She spoke only Chatino normally, but began to speak in a thin pretty voice in Spanish and asked questions: 'What do you want, soft or toasted [tortilla]?' and 'He went far away, he's not here.' She got better." (Appears again under "*Chaneque*" below.)

There are apparently specific medicinal plants for madness, in addition to the usual *copal* cures and medicinal plants for *aire*. In this account, manic behavior is attributed to excessive thinking or worry, and to drinking *mezcal*, not to *aire*. "They get naked, roll in the dirt. One drinks about two litres of one plant from Teojomulco. One man from El Portillo knew that there [in Teojomulco] one can obtain this remedy [which consists of] one or various plants. [One man] drank about two litres a day for two weeks. He was crazy for around twenty twenty-five days. He sang and laughed alone, a fellow eighteen or twenty years old. They say he drank *mezcal* and this was the result. He's [still] alive and has children now. Another was cured too, but took longer, about three months. They

took care of him in his house---we put the other one in jail. He was cured with *copal* burnings and all that." "But not with that herb?" No. "Why does madness come?" "Just from thinking too much, they say."

### **Aire as Common Cold**

*Aire* is also the cold outside air that causes the common cold. Cold *aire* is sometimes referred to simply as *aire*. "Also when one walks far and there is a lot of wind, *aire* strikes. We say *aigre*." Abrupt transition from hot to cold external temperatures creates the vulnerable state in which cold wind can enter the body. For a more detailed discussion of cold *aire* as a cause of the common cold, often accompanied by cough, see the section on Cold.

The heads of small children, ages one to two years, are covered with a cap to protect them from *aire*.

### **Aire as Abdominal Fullness**

Abdominal fullness and bloating are attributed to *aire*, that can be relieved by breaking wind. "*Aire* my stomach has, from cold, my stomach is distended, no air goes out from my *tyosë"ë* (anus)." Another said he had "*aigre*, because my stomach feels full (*lleno el estómago*)."

### **Aire from Anger**

*Muina* is sometimes described as a hot *aire* that can strike or get trapped inside the body. "What is *aire*?" "When one gets angry (*se amuina*), that *aire* stays inside."

Husband: "When a woman gets angry (*se amuina*) in the kitchen that is a natural *aire* that is around every day."



Wife: "If we fight here you will be struck by *aire*, and me too."

J.W.: "If the two of you fight then I can get struck by that *aire*?"

Wife: "Yes, on you, that's *susto* (fright)."

Husband: "If she argues, the *aire* from the fire will strike her, *aire* of *muina* (anger) in the fire."

### **Aire as Panic Attacks**

Sometimes descriptions of *aire* resemble anxiety or panic attacks. A woman in her thirties complained of *ataques* and *aire* in her chest, pain and palpitations. "Then my heart starts to jump." Another woman used *espanto*, rather than *aire*, to describe her anxiety. "I'm afraid to leave the house, my heart is frightened (*espantado mi corazón*)."

### **Aire as pain that moves**

Pain that changes location in the body, or pain that comes and goes, is considered *aire*. "Because my pain changes, for that I say *aire*. Every fifteen days I get *aire*, like pricks in my back, that the nuns relieve with injections [of Tiaminal]."

"When does one say *aire*?" "When the pain changes to the other side."

"How does one know if it's *aire*?" "Anda (it moves)." In other words, the pain moves about, without a fixed location.

A mother asked me about her daughter's pain that moved from the right subcostal area to the chest, stomach and left side of the abdomen, "Would that not be *aire*?"

### ***Aire* When There is No Cause**

When one has no better explanation, then *aire* is deemed the cause. Such is the case when babies cry. Colic, a term used by pediatricians to describe unconsolable crying in infants, is equally vague.

"*And why do the children cry?*" "Sometimes they are not well, they have *aire*." "*Where does this aire come from?*" She shrugged, "But sometimes they have, and since one doesn't know why they cry... when they cry, when one doesn't know what they have, that's why we treat them this way." (Appears again in "*Tiricia, ojo and espanto de niños.*")

### ***Aire* from the Dead**

Dead people and animals are *aires* that can strike. *Aires* of the dead are common among the Zapotec and mestizos in the Oaxaca valley, but not among the Chatino. The Chatino dead rest in peace and do not wander as *aires* like Oaxacan valley or North American *aires* and ghosts do. Chatino dead cause illness, but not as wandering *aires* (see 'calor de viejo'). I suspect the man who divined this *aire* was not Chatino, but did not verify this. I have heard numerous accounts of *aires*, especially wandering ghosts who experienced traumatic deaths, from the Zapotec. This is an isolated Chatino case, and does not entail the *aire* of a person. I include it here since it was related by a Chatino speaker.

"*Hierba de huaretero (barretero), kyishie tlä'a* (bitter herb, *Calea urticifolia*, Asteraceae), for *latido*. My toes turned purple. My back has been hurting for three years, my knees. I started treating with garlic. A dead animal, beast of burden or donkey, one man divined. I didn't have it before. 'You have

pure *aire*. Eat garlic,' he told me. And I ate only garlic and slowly I began getting better, slowly. My wife ground a fistful of dough like this. I could hardly eat two pieces of tortilla, that's all."

In Zenzontepec, ghosts are spirits that leave the designated person's body up to three days before death or at the moment of death. These ghosts visit family members and close friends to say goodbye and prepare them for the coming loss. Justino and his family heard the soft Chatino calling whistle, "fsht," outside their house three nights in a row, and went out with a flashlight to see who it was, yet saw no one. Two nights after the last "visit" a cousin was killed. In the following account, *aire* refers to the ghost.

"A ghost came behind the little house of *zacate* (straw) and *carrizo* (reeds, *Arundo donax*, Poaceae) two nights ago. The dogs ran out barking, my daughter went out to look with a [flash]light. We heard noise, an *aire* came to announce that something is going to happen. We had two warnings, a hummingbird and then the ghost. Both preceeded the death of my wife's nephew in Manos de Señor."

"When the hummingbird whistles and stands like this whistling, something [bad, *maldad*] is going to happen. When it goes like this, from flower to flower [and] it's pretty, then no. When it comes into the house, it's worse, then it's coming to the family."

"When the fox (*costoche*) howls, and the owl (*tecolote*), and the hummingbird (*chupaflor*) comes, and the owl (*lechuza*), it's the same as a ghost."

"When a man is going to die, the fox howls, whistles, they say it whistles for its year, but it's not true." Justino inhaled, "Heeeeeee," and exhaled, "Awh

awh. When a woman is going to die the fox doesn't howl like that. [The fox] normally howls like this, awh, awh, awh. Before those four died in the car a fox ran on the road and howled like this [heeeeeee, awh, awh, as for a man]." "And the dogs didn't bark," his daughter added.

"People tell me they see someone at the door and when they go to greet them they're not there and the person, turns out, has died."

Exposure to a dead body when one has cuts will cause infection. One therefore can not participate in a funeral when one has open abrasions.

### ***Aire as Espanto***

*Aigre (aire)* is sometimes synonymous with *espanto*, as in this case.

Although the patient and his father speak only of *aire*, *espanto* is suggested by the herbs used and by the fact that the illness was related to a fall.

A young man twenty-one years old lay in bed for two and half months. His father spoke first, "He was twisted by *aigre*. He fell at the anniversary of a dead person in December. He didn't drink [alcohol], only a little, that's all. He can go to the toilet, [when he gets up] he sees white." Then his son spoke, "All the *latido* went up to my head, it makes my sight, like lights I see. I eat tortilla, I drink fresh water, my stomach is churning. I have appetite still. In the past it was like this, thirteen years ago, I got this *aire* at a fiesta in San José. Only *aire* goes up to my nose. The *latido* goes up to my mouth, my mouth is dry."

"He took *huaretero (barretero, Calea urticifolia, Asteraceae)*, *camoreal (Iostephane trilobata, Asteraceae, Psacalium sp., Asteraceae, or Geranium sp., Geraniaceae, all called camoreal)*, and *yerba de espanto (Hydrolea spinosa,*

Hydrophyllaceae). For *vergüenza* (shame), for *aire* inside, is there a remedy for that?" his father asked.

The young man eventually went to Oaxaca where he underwent surgery for an hiatal hernia. We can decipher the thought process from the herbs taken. *Huaretero* is for *latido*, *camoreal* for internal wounds and contusions, and *yerba de espanto* for fright. Although both the father and son spoke of *aire*, the herbs used were not specifically for *aire*.

### **CHANEQUES, SPIRIT GUARDIANS OF PLACES**

**Nungati** are *chaneques*, malevolent spirit guardians of places, that can attack unexpectedly. There is considerable ambiguity in the use of the terms *aire*, *chaneque* and *espanto*. One person distinguished between the *chaneques*, **nungati** which he called the "spirits of nature, who relinquish their possessions (*los despojados de sus bienes*), the owners of the land from whom one needs to ask permission to work and to plant, otherwise they attack the works" and "**kiesu**, the evil that causes pain, that attacks a person."

"*What is jo'o tselayuu?*" "They say 'saint of the world' or 'saint.'" "*Does he cause illness?*" It's the same, because if [one is frightened] during the day, that say one has caught heat of the midday sun. That is **jo'o nungati**, the *chaneque* that lives in the *barrancas* where there is water, in rivers too, and in the dry places too. **Kieku shi ndshiu' ndzu'u**, or **shi kyuitiyu itya**, in the dry hills where there is no water."

*Chaneques* are also called *los rayos*, "the thunderbolts." One man showed me the place where his children saw "naked children jumping from one rock to

another, but there was [only] *monte*, there was nothing [there]. Those are the *chaneques* or 'the thunderbolts.'" Real children could not have been playing in the middle of the *monte*. Children are especially likely to see *chaneques*, who are "like people, only very very thin." "Some people say they see 'the thunderbolts,' little children playing without clothes."

Before planting a field or when building a new house, *chaneques* need to be propitiated through ritual, to avoid arousing their ire and suffering harm. "When the coati is eating a lot of *milpa*, bury seven tiny tortillas (about 1 inch diameter), with the blood of a black chicken, killed right there, and *mezcal*, in a hole in the ground. Cover the hole and place seven or nine candles, I don't remember exactly, and a whole box of cigarettes, lit, for the *chaneque* to smoke while the person [performing the ceremony] prays. My father and I had someone from Tlacotepec come and do this when we had a *milpa* together. One does it at a high *milpa*, so that the *aire* and badger don't come." Here *aire* and *chaneque* are synonymous. (See "*Chaneque* and *Aire*" below.)

One curer who does blessings for new houses was criticized for charging exorbitant fees. He "asks for chocolate, bread, chicken, *copal*, candles. All these he buries, and then he asks for \$350 pesos." (A day's wages were five pesos.)

### **Herbs for *Chaneque***

"Pain that come suddenly when one is walking on the path," is attributed to *chaneque*, the guardian spirit of a place. Sudden and severe cramping, sprains and fractures, may all be considered pain from *chaneque*. "One hits oneself with seven sticks of *yerba de chaneque*, (*Russelia* sp., Scrophulariaceae) when one gets

a pain on the path." The fragrant root of a different *yerba de chaneque* (*Eryngium bonplandii*, Apiaceae) is crushed and the mass applied to the affected area, "four or five pieces, three or four times, in the morning before eating." A third *yerba de chaneque*, more commonly called *epazotillo* (*Scoparia dulcis*, Scrophulariaceae), or *epazotilla*, is used to treat *chaneque*. For a strong pain that comes suddenly, "one makes a cross with the branches over the pain. Another person hits the painful area with the plant. The branches are then placed in the road in the form of a cross."

*Chirimoya* or *anona* (*yanndjulua*, *Annona reticulata*, Annonaceae) leaves are used for *chaneque*, "when one's hands and feet begin to hurt, [the leaf] is heated with almond oil and tied [to the affected areas] so that it doesn't fall off." Another similar use of *chirimoya* leaves entails applying beef lard to the leaf, passing the leaf through *ocote* (*Pinus* sp., Pinaceae) smoke until it turns black, then affixing the hot leaf to fractures or sprains. The fresh leaf is stuck onto the forehead for relief from headache. People sometimes pass along the path with a leaf of *chirimoya* stuck to their foreheads.

### ***Chaneque and Aire***

*Chaneque* is sometimes used interchangeably with *aire*, although each have distinct terms in Chatino as well as Spanish. Due to their association with specific places, *chaneques* cause *espanto* (fright), according to some.

"*Chaneque* is *aire*. When one goes to the store [to buy medicine] and doesn't get well, then they say '*chaneque*.'"

Below *aire* is distinguished from *espanto*, and *chaneque*. *Espanto* is usually when one falls, and there is a clear cause of illness. In the following exchange a young woman tells me about herbs she knows. Treatment for *aire* is inferred, as *pitona* (*Lippia alba*) is used primarily for *aire*.

"*Pitona* (*Lippia alba*) and *yerba buena* are for stomach ache. *Pitona* (*Lippia alba*) is also for body pain, applied with *mezcal*. *Guaco*, the Mixtecs sell it for pain from *aire*, my mother bought some but it ran out. *Aire* is when there is a pain that comes without falling and one doesn't know why." "Do you know what a *chaneque* is?" I asked. "*Chaneque* is when one falls and there is pain." "Is *chaneque* the same as *espanto*?" "*Chaneque* is when one falls and there is pain, but without injury. When one falls and is injured, that isn't *chaneque*." "And this pain that you had [in your chest]?" "It started in the ear, but when it reached here," she tapped her chest, "they say it's *aire*. [A curer] came here and he said so."

"**Tyi kuë'ë ndzu'u jī'i** [is] when one has *aire*. **Tyi shiguji kui ndza'a**, [is] *chaneque*, [when one] was frightened, was frightened on the path, or [felt] anger, or so *chaneque* one has... *Chaneque*, where one was frightened, **ngati** (*chaneque*) they say. **Jo'o nga'a**, sometimes they say, who is like a child, like a person shrieking in the night, very thin, whistling very softly, that is the **jo'o nga'a, ngati**, the *chaneque*. [The *chaneques* are] like people that grow very tiny, not very big. At one [a.m.], at two [a.m.] when one sleeps in the *monte* (wilderness) [the *chaneque*] does *maldado* (maleficence). When one sleeps in the *monte*..."



The wife added, "[The *chaneque*] changes to a man and to a woman. [The *chaneque*] appears as a woman to the men and changes to a woman too, and like you, it looks like a man. For that reason it is necessary to pray a lot when one goes to sleep in the *monte*, so that [the *chaneque*] doesn't grab you."

"Chaneque *and aire are the same*?" "Yes, the same. Sometimes one is out walking and [the *chaneque*] appears like the devil, appears like people." (The devil and the Jews are called **kuinilaja**.)

His wife related, "A dog passed a woman, touched her clothing. She became crazy. She spoke only Chatino normally, but began to speak in a thin pretty voice in Spanish and asked questions: 'What do you want, soft or toasted [tortilla]?' and 'He went far away, he's not here.' She got better."

The husband saw a man one night when he was alone in the *monte*, and picked up a rock for protection. The man ran down the hill "where there is no path" and disappeared. Only *chaneques* run "where there is no path."

Newborns are especially vulnerable to evil influences, such as *ojo* (evil eye), the strong gaze of a pregnant woman or other person (see "*ojo*" under *espanto*), and to *chaneques*. "When a *chaneque* grabs [a newborn] in the place where he was born, there *copal* is burned and prayers are said." "What are the *symptoms*?" "They turn pale and cry."

While *aire* can refer to evil caused by trickster spirit entities of places, or to the spirits themselves, *maldad* usually does not, although the spirits are often just as troublesome as one's neighbors. The following is an exception, where the *maldad*, in this case insertion of objects, is attributed to a *chaneque's* evildoing.

A thirty-three year old mother of six suffered severe neck pain since the birth of her last child one year ago. "Is it not because of the *chaneque* that put stones inside her?" her mother asked. They paid fifty pesos a visit to a curer every twenty days for three months, until he wanted more money. "A little bone, a piece of glass came out."

### ***Chaneque and Espanto***

A respected Chatino leader spoke eloquently on *chaneques* and *espanto*: "*Chaneque* is where the spirit is raised, when one falls and is frightened in a place, and there *copal* is burned and there the spirit is handed over. If you go to resolve a fall in a place, you will burn *copal* there." "What are the symptoms?" "When they begin to suffer from fever, or headache or they don't feel like eating."

"Is [*chaneque*] the same as *espanto* or separate?"

"The same."

"What is the *chaneque* called?"

"**Jo'o nungati** is the *chaneque*, *pues*. **Nungati** are the people that live in the places but aren't seen. **Jo'o kiakieku** lives in the places that do not have dwellings, saint *chaneque*, the living being that lives here, that lives in the gullies, in the hills. They are invisible, [they] cannot be seen. They are the ones that do the favor, that raise the spirit, they are the ones that frighten, and that are asked to leave one alone, that's why *copal* is burned, is burned over there. Sand is gathered, if it's pure sand like in the river, one bathes with it, or the litter is gathered, rocks, leaf, sticks, of the

place, and *copal* is burned and candles, and rosaries are said. Where the spirit is raised one is healed."

*Chaneques* are evidently easily appeased with offerings, easing the possibility of a cure, but also making one vulnerable to the ill wishes of an enemy. Local intertribal wars over municipal boundaries may well be continuations of pre-conquest disputes. The Chatino of Zenzontepec fight the Mixtec on two fronts, on the Santiago Amoltepec border to the north and on the Santiago Ixtayutla border to the west. Battlegrounds are not limited to the visible realm. "When the Mixtecs pass they light a cigarette there and they leave it there so that the *chaneque* will frighten us, three cigarettes."

**Table 3.4: Herbs for *aire* and *maldad*.**

ajo (*Allium sativum*, Liliaceae)  
albahaca (*Ocimum basilicum*, Lamiaceae)  
almendra de cedrón (*Terminalia catappa*, Combretaceae)  
camote de zopilote (unidentified)  
canfor (*Cinnamomum camphora*, Lauraceae)  
chichicaxtle (unidentified)  
crimostaza (unidentified)  
estrella del mar (not a plant, starfish)  
gotacoral (not a plant, red coral, *Corallium* sp.)  
guaco (*Aristolochia variifolia*, Aristolochiaceae)  
luís perez (*Pluchea salicifolia*, Asteraceae)  
mocoxiana (specific for uterine bleeding) (*Ageratina tomentella*, Asteraceae)  
nuez moscada (*Myristica fragrans*, Myristicaceae)  
pirúl (*Schinus molle*, Anacardiaceae)  
peonia (unidentified)  
pitiona (*Lippia alba*, Verbenaceae)  
puma or espuma del mar (sea sponge?)  
ruda (*Ruta chalapensis*, Rutaceae)  
sávila (*Aloe vera*, Liliaceae)  
tecomachiche (bitter gourd, Cucurbitaceae)  
tisana de tela (unidentified)  
yerba de clavo, yerba de brujo (*Ludwigia octovalvis*, Onagraceae)  
yerba de la bandolera (unidentified)  
yerba de sueño (*Hydrolea spinosa*, Hydrophyllaceae)  
yerba de brujo (*Acourtia bravohollisiana*, Asteraceae)  
yucundó (unidentified)

**Table 3.5: Herbs for *chaneque*.**

hierba de chaneque (*Russelia* sp., Scrophulariaceae)  
hierba de chaneque (*Eryngium bonplandii*, Apiaceae)  
epazotillo, hierba de chaneque (*Scoparia dulcis*, Scrophulariaceae)  
chirimoya (*Annona* cf. *reticulata* var. *primigenia*, Annonaceae)

## **ESPANTO**

*Espanto*, fright, **nkui kyitsa**, is caused by a startling experience. A sudden fall can startle and cause fright. When one falls on the ground, **tyi nga'jne yuna** or **nga'jne yuu** also refer to a fright. A person's spirit separates from the body and is captured by a *chaneque* (spirit, see "*Chaneques*") at the place of the fright, "...if you are frightened by a *chaneque* in, say, El Carrizal, day or night, free the one who is bound, earth spirit." *Espanto* and *susto* are used synonymously, but *espanto* is the Spanish term preferred by the Chatino of Zenzontepec and Tataltepec.

When asked how one knows one has *espanto*, the Chatino commonly reply, "when one gets sad and sleeps during the day." Symptoms of *espanto* can manifest weeks, months or even years after the frightening experience occurred. Almost any physical illness can be caused by fright. In order to eliminate the possibility of a given fright causing illness later on, each fright must be treated.

Fear and fright are not the same. Fear, or fearfulness, can also cause illness. For example, I was told that I frequently and easily contracted scabies because I was afraid of getting them.

Fright is probably the most commonly treated illness in Mesoamerica. Treatments for *espanto* vary, but almost always entail a prayer summoning the sick person's spirit to be released from the place of entrapment and restored to its rightful owner. Treatments may vary for the different types of fright and by curer. Treatments vary from region to region among the Chatino and between indigenous groups. For example, the valley Zapotec commonly use *pirúl*

(*Schinus molle*, Anacardiaceae), *albahaca* (*Ocimum basilicum*, Lamiaceae), *ruda* (*Ruta chalapensis*, Rutaceae) and *romero* (*Rosmarinus officinalis*, Lamiaceae) branches or leaves moistened with *mezcal* or whole eggs to sweep the body. In Zenzontepec, Chatino curers do a *limpia*, a ritual sweeping of the body with a small packet of *copal* (*yana*, *Bursera* sp., especially *B. bipinnata*, Burseraceae) wrapped in *totomoxtle* (corn husk), and with a white tapered candle (Fig-3.4). Both are burned after the patient leaves. I discuss regional variations in Chatino curing of fright in more detail elsewhere (See "Diversity in Chatino Medicine").

In a typical case of fright, an eight year old girl complained of left ear pain and partial deafness since she fell out of a tree six months earlier. She had an ear infection which had cleared up. The mother thought her daughter had *espanto*, "because [the ear pain] was from the fall," so she asked a curer to treat her daughter. The curer confirmed the girl had *espanto*, "he cleansed her very well with *copal*. I think she had *espanto de animal*."

When illness is prolonged, people will resort to multiple treatments. In the following case, treatment for fright is just one among many approaches tried, in an attempt to find relief. A woman who initially suffered a wrist injury due to a fall later developed severe shoulder and arm pain with limited movement. She was treated first by the local medical intern, then by the nuns who massaged her with a salve. Then a curer burned *copal* in the place of the *espanto*. He also used laying on of hands, by breathing onto his hands, then placing his hands on the place of pain. The curer diagnosed her as having *muina* and *espanto*. Then I treated her several times with acupuncture. She also took herbs for *aire*.

A person can experience multiple frights, and have both heat and cold at the same time. Multiple explanations are especially likely when illness is advanced. B. attributed her six year old cough to fright by water, *espanto de arma* (fright by firearms), to *cuerda* (see "*fuera* and *cuerda*"), *maldad* (sorcery) and general debility, "my body is bad." "I itch here," she said pointing to her throat, "as if there were a lot of worms here itching in the gullet." Worms itching in the throat is a reference to witchcraft (also in "*maldad*"). Her husband, a curer, diagnosed her as having *muina*. I learned that B. died recently (1997).

A thirty-nine year old man described his frights, "I have a lot of fright. From a dog who wanted to bite me and I was very frightened. From people, I was sleeping and they wanted to kill me with a machete. I ran. Someone told me they were thieves on the coast. I went there to break *copal*. From water, I fell in the river and the water carried me. I almost died there. From a snake, I bumped into a snake, a black snake."

Considerable overlap exists between illness concepts. This overlap is due in part to ambiguity of the concepts, yet more importantly, to the Chatino worldview in which heat, cold, spirits and *aires*, the human body, feelings and experience, are intimately connected. Hence, much that is discussed in this section has also been covered elsewhere, under "Heat and Cold," "*Muina*," "*Aire*," and "*Chaneque*."

### ***Espanto de rayo, fright by lightning***

"When the [water in the] *arroyo* rises or when one falls, then one is frightened. When lightning falls nearby when one walks on the path, is when one is frightened sometimes."

"Fright by lightning fell very close to him, and that fire, the heat of the lightning, penetrated inside him."

A Tataltepec curer treated fright from gunshots as fright by lightning. She diagnosed by watching *copal* burn in the presence of the patient. "The *copal* flashes (*chispa*) like lightning when it is fright by lightning," she explained. A Zenzontepec woman mentioned *espanto de arma* (fright by firearms) as a distinct class of fright.

### ***Espanto de lumbre, fright by fire***

Domestic quarrels often take place at home, in the kitchen hut, by the fire, causing fright by fire. *Muina* (anger) and fright by fire are therefore sometimes used interchangeably. "One curer told C. that she had *espanto de lumbre*, that a *muina* stayed there." Witnessing a conflagration, such as one's thatch house burning, also causes fright by fire.

### ***Calor del sol, heat of the midday sun***

*Jo'o kuitsa* is the sun god (saint sun), also the term for noon, that can cause *tyikie' jo'o kuitsa*, heat of the midday sun, (*le tyikie' shikuä* very hot sun, *ngayutsë kuëa tyikie'*), when one experiences a fright during the daytime. *Shikuä*, (also *kuashi*) sometimes called *jo'o shikuä* (*jo'o kuashi*, saint sun), also



refers to the sun, sunlight, sun rays, the sun's radiance. (See "Heat and cold" for a discussion of these terms.)

Symptoms of sunstroke, such as headache and thirst, are considered fright by the midday sun, or heat of the midday sun. Anger, which is always hot in nature and is another cause of headaches, can also be associated with fright by the midday sun. "When one has *muina* or fright, when one falls, one suffers *muina* at that time." "When one gets angry when it's hot, the sun's heat catches one and then one loses appetite, gets sick and weak. When one suffers headache and doesn't want to eat, and only wants to drink water and feels that heat, that is *jo'o kuitsa, jo'o shikuä*... If it's in the day [that one is frightened] they say that *calor del sol* (heat of the sun) catches [one]."

#### ***Espanto de agua, fright by water***

When one falls or is frightened near water, either by the river, *tokela*, or in the *barranca, kiekü*, then one has fright by water. The *barranca* is cold, *jlyä kiekü*. Fright by water causes swelling, *kie*, joint pain (*dolor de hueso*), knee pain (*dolor de rodillas*), calf pain (*dolor de canillas*) and diarrhea which are all symptoms of cold. Warming herbs are used internally and externally for fright by water (See "Heat and cold").

"*Kiekü nga' jne yuu* [is when] one falls in the *barranca*, where there is water, and feels cold, also swelling from the cold. *Tokela yutse* is when one has been frightened in the river."

"*Kuikyitsa kiekü*, fright by water, a water well, *kyatusu kitsa kuendaano, kyu jui nyate kiekü*, someone was killed there."

"How do you know that [your illness] is from cold?" "I feel cold from the waist down when it is fright by water."

An elderly woman referred to her visit to the doctor for back pain, "He told me that my kidneys are bad. I only told him that it was fright in the river."

"When one sees a dead person in one's dreams they say that is *espanto de agua* (fright by water)."

A woman who was cured for fright by water said, "It rained hard in Oaxaca and I was frightened."

***Espanto de culebra, espanto de perro, espanto de bestia, fright by snake, dog and "beast"***

Animals are a common cause of fright. Fright on seeing a snake causes the pulse to slow and is considered cold, because snakes are cold. Dog fright also causes the pulse to be hesitant or choppy (*se corta la sangre*). Large animals, "beasts," such as an equine or bovine, can also cause fright.

### **Diagnosis of *Espanto***

*Espanto* can be diagnosed by a curer, via the pulse or by divination of a sign during the curing ceremony, such as the way the candle flame, *copal* (see "fright by lightening" above), or hair (see "curing ceremonies" below) burn. "The candle flame is important. If it flickers, the life of the patient is in doubt. If the flame burns high, he will have a long life. The flame represents the soul."

Foam of *espinosilla* (*Hydrolea spinosa*, Hydrophyllaceae) is used for diagnosing and treating *espanto*. "*Espinosilla* is for *espanto*. You mix it in your hand, you mash it in water and put in on the children's heads when they get sad, and bathe them with it. You put the foam in a cup and there it comes out what the

fright comes from, from a person, dog or a bull or any animal. The foam falls and out comes the figure of an animal, dog, person."

The kind of fright can be distinguished by the pulse. Hot frights cause the pulse to be rapid while cold frights are recognized by a slow pulse. Hot frights include heat of the midday sun, fright by lightening, and fright by fire. Cold frights include fright by water, fright by night, snake fright and possibly also other animal induced frights. I suspect that people induced frights are hot, like *muina*. Although *espanto de gente* (fright by people) was never specifically mentioned as hot, at least one person I treated had been diagnosed by a healer as having both *espanto de gente* and *muina*, and another who had *espanto de gente* had heat symptoms, such as *muina* and red eyes.

In Zenzontepec a curer takes the pulse with two thumbs positioned in parallel fashion on either side of the palmaris longus, above the supine wrist, at a distance just proximal to the styloid process of the radius on the radial aspect. The pulses are taken for each hand. Different pulse qualities are attributed to the different *espantos*. (For more on the pulse qualities, see "Heat and Cold.") A curer explained the pulse, "In snake fright the blood comes cold, every once in a while, *yutsë kuena, yü' ndakui nijya tene*. In fright by a dog the blood is also very choppy (*se corta la sangre mucho*)."

*Espanto* is often self-diagnosed by the patient based on a remembered frightening experience or fall. "[There are] those that know how to take the pulse, those that divine who sent the illness, because they say the blood speaks. Therefore, nothing but the pulse can distinguish. But when one doesn't want [to do] thus [i.e., see a curer], one knows why one doesn't feel like eating. When one

has *muina* or *espanto*, when one falls, one suffers anger at that time." Since the location of the fright is often the preferred place for the curing ritual, the patient's disclosure is important. "There where one was frightened by a dog one breaks *copal* and burns it there."

### **Rezo, Prayer**

For the Chatino, prayer is the essence of treatment. A Chatino healer, who diagnoses with the pulse, and cures with candles and *copal*, is called *tyijo'o*, "he who prays." While I at first scoffed when asked if I knew how to pray, I grew to value the importance of prayer in Chatino eyes. Scientific research on the placebo effect has revealed the importance of the healing relationship and faith in the cure to healing. Prayer can be considered a manifest form of intention to heal.

I was taught my first Chatino prayer after I experienced fright. I got off the bus after the twelve hour bus ride and as I stood outside waiting for my gear to be unloaded from the roof, my whole body suddenly began to shake. I did not feel frightened. I wrote in my field notes, "When I got off the bus today my legs were shaking, I was literally shaking. No wonder I don't want to come back. I asked Rich, 'Why am I shaking?'"

The following day we hiked four hours to another community, where I was introduced to a wonderful, little-known healer. Three days after my fright the healer accompanied us to the summit of Cerro Neblina, the highest peak in the area, where we visited the sacred cave of the Chatinos, collecting medicinal plants along the path. I never told him of my experience three days earlier. Pausing to rest, the healer asked if I had already been told the prayer for *espanto*. I asked

how one knew one had *espanto*. His answer was unusual, "When the whole body trembles." (The usual reply is "one gets sad and sleeps during the day.") He asked if anyone had already taught me the prayer for *espanto* in Chatino. I said, "No." He then recited the Chatino prayer for *espanto*, using my name and the name of the place from which I had just come in the prayer.

"Juana Weiss, if you are frightened by a *chaneque* in, say, El Carrizal, day or night, free the one who is bound, earth spirit, **tsää nutela, nu ku la tsa nu kusatĩ, kutana.**"

He explained, "If a woman [is frightened], thirteen small balls of *copal* are made, and if a man, fourteen [small balls are] wrapped in paper or in *totomoxtle* (corn husk), one cleanses (*limpia*) thoroughly. One [says prayers] or makes a cross, then burns [the *copal*] on a brazier at the place of *espanto*. That's how I treated my *muchito* (child). [My child] was frightened in the house, he couldn't stand up, move, get down from the bed. He didn't talk. Three days passed and he didn't get better, that *chamaco* (boy). He was frightened that resulted in *espanto*.

"And all this litter is burned," he grabbed a handful of leaf litter, "one puts [the litter] on top of the *copal* and the smoke envelops the person (*se ensoma*). One can do this to oneself too, or if someone is rich, he can cleanse [with *copal*] and someone can go for him to the place of *espanto*. [Cleansing] with *copal* is a very good remedy."

Numbers are significant in Chatino ritual and curing. Fourteen and thirteen are the sacred numbers in Zenzontepec, fourteen for men and thirteen for women. Seven is the sacred number for the Chatino of other areas, for both men and women. These numbers figure as the number of portions of *copal* for curing a

man or woman, the number of times prayers or cycles of prayers are repeated, and sometimes for the number of herbs in a medicinal formula. The number of funerary objects, such as tiny tortillas and cacao beans (see "Tío Justino," Chapter 2), are in accordance with these sacred numbers. Different Mesoamerican indigenous groups have different sacred numbers, often one less for women.

*Copal*, candles and white flowers are the three most common items used in Zenzontepec curing rituals. A curer prayed facing east towards Oaxaca on the porch of a sick woman's house, for, in his words, *espanto de agua* (Fig. 3.5). His patient later told me, "It rained hard in Oaxaca and I was frightened." The curer had a lit candle, a small vase of white flowers and a frying pan with burning *copal* set on the ground beside him. White flowers are often brought to the chapels and the church as gifts for the saints. People carry small bouquets of white flowers long distances, say, from the river crossing at 300 m. to a village at 1400 m., a distance of several hours by foot, and leave them as offerings on the chapel altar when they reach their destination.

Prayers may differ based on the location and type of *espanto*. "Ngayutsë kuëa tyikie' one says if one has fright by the midday sun, fright by heat, tyikie'. If here where there is water a *muchito* (child) was frightened, there is a prayer for where there is water." Some appeal politely to *jo'o tselayuu*, god of the world, to please do a favor, *nga'ne tsa tse'o*, for the spirit to be released. The full name of the person is repeated several times.

Curers will often pray after the *limpia*, after the patient has gone, while the *copal* and candle burn. Some curers are reknowned for their ability to heal from a distance, without the patient ever coming to see them. Healing from a distance is

also practical where the sick cannot hike the long trails between villages. Some curers spend whole days in prayer. One teacher told me he had gone to visit a curer but couldn't speak with him. "because he was praying."

Justino taught me how one prays. He pulled out a black rosary that had lost its small cross at the end. The rosary was a gift from his aunt to his father to use for burial. When his father became a Protestant evangelist he gave Justino the rosary. Justino said, "Without this [a rosary] one can't cure. Say ten Hail Mary[s] then Our Father Son and Holy Ghost, make a cross and one Our Father, stopping at the tenth, proceed with ten Hail Mary[s] to complete all fifty [beads]. Some do this fourteen times, two times seven. Can you imagine!" He was incredulous and emphatic, "Fourteen times!"

Curers are often judged by their ability to pray. "He cures very beautifully we believe, because he prays a lot. There are others who cheat, that just hold the *copal* in the hand, they don't pray. V. charges five [pesos]. For the dream he brought three candles, because I dream very ugly, all sorts of things... [V.] told some man with a toothache but no cavities '*calor del sol* (heat of the sun).' He prayed a lot and, of course he cured him."

"T.'s father prayed a lot and laid his hand on us and that's why that fellow [T.] knows [so much about medicine]."

In reference to the same curer, V., for whom I had heard praise, another said, "No, [we] don't believe in him." "*Why don't you believe in him?*" "Because he just started [curing] and he doesn't know how to read, and if he didn't have anyone to teach him or to write it down for him, then we don't believe." "And how did your husband learn [to cure]?" "He [learned] from memory, from my

father, who knew how to pray." "Doesn't know how to read" is an expression that means the person can't read a Spanish prayer book, hence can't pray properly.

"Knows how to read" is a compliment and recommendation for a curer.

Curers fear accusations of witchcraft, and, because of their fame and additional source of income, they fear envious neighbors who may use witchcraft against them. When I told Justino that a curer I knew did not want others to know of his ability he said, "He's egotistical! The Mixtecos are not like that. They cure as they can and if they don't know herbs, they cure as best they can."

Women are not generally regarded as healers in Zenzontepec because they do not "break *copal*."

### ***Espanto* Curing Ceremonies**

#### ***Fright by a dog***

I describe two curing ceremonies by Zenzontepec healers in some detail. In Tataltepec, our long-haired dachshund loved to dart in and out of kitchen huts in search of bones, which startled very young children. Worried mothers emerged from the kitchens to request a snip of dog hair to treat for fright. One time, a nine month old infant pulled the dog's hair. The dog barked, startling him, and he began to cry. The mother grabbed and held the child. I was with a curer from Zenzontepec visiting Tataltepec. The curer addressed the mother and grandfather, "He needs to have *mezcal* blown onto his chest and back. Or you cut the hair of the animal or person that caused the fright. The hair is wrapped in a leaf or paper, whichever. The child is cleansed (*se limpia*)---that should be done with *copal*, but if there is no *copal*, with sugar which also makes smoke like *copal*."



I was asked to cut the necessary hairs for the ritual which I then handed to the curer. The grandather rushed to get a leaf and some sugar. The curer did a cleansing with a small amount of dog hair wrapped in a leaf and then wrapped again in a small piece of plastic because the leaf was too rough to rub against the baby's skin. He wiped the baby's head, back, chest and abdomen, arms and legs, pausing longer as he held the packet over the heart. He repeated the cleansing several times, maybe three. He asked for coals in a dish, and placed the packet on the hot coals to burn. Then he poured the sugar over the coals to create a large surge of smoke. He held the baby in both arms and swung him gently over the smoke until the baby took a deep breath.

"If [the child] doesn't inhale the *susto* (fright) won't leave and he will get sick later, first with diarrhea. But he did inhale, so if he gets sick afterwards it'll be from another illness, not *susto*," he reassured the mother. The child seemed frightened while suspended over the smoke that smelled of burnt hair, but relaxed after the smoke subsided. The curer checked the ashes and pronounced assertively, "Yes, he was frightened. It came out that yes, he was frightened."

*"How do you know?"*

"I erased it already," but he still managed to show me the remains of the dog hairs in the clay dish. When the ash maintains the distinct shape of the hairs, and does not collapse into an amorphous ash heap, that is a sign that a fright indeed occurred. Privately, later, he told me, "Seven times I cleansed him and seven times I did this." He showed me how he rocked him back and forth with his arms. "One must say words, the name of the child, one must ask that the *susto* (fright) leave. I'm embarrassed to talk out loud so that they hear me." After some

coaxing, he recited the prayer for me, "Pastor [the child's name], spirit and soul of Pastor, you who have been frightened by Coco, go back to your place so that you don't fall ill, Pastor. Pastor, come because I call you, spirit and soul of Pastor. Five times I said this."

"*Why five?*"

"So that he returns. It should be nine [for adults], for little ones [I do] five. [For children] it should be seven. When an adult dies they do nine days [until the cross is raised]. When a child dies they do seven days. So seven is bad [luck], for that reason I do five, because otherwise it's as if [the child] died. For fright from a person, one also has to request hair in order to treat."

I asked about his earlier suggestion to blow *mezcal*. "*How do you understand why the espanto is removed when you blow mezcal?*" "It opens the pores and that makes him inhale, didn't you see that the child breathed when I passed him through the smoke?"

***Heat of the midday sun, fright by fire at night, fright from people and dreams***

A curer felt the pulses of a twenty-nine year old woman, "You get angry a lot in the sun, heat of the midday sun, fright from people, that's why the dreams come that you want to get rid of." She had told him of a nightmare in which she ate her own intestines. He paused to explain. On her right hand with his right thumb he felt "*espanto de gente*" and while paying attention to his left thumb, still on the same wrist, he said, "dreams a lot and heat of the midday sun, you get angry a lot." On the left hand the "luck comes out," one can foretell the future. Feeling her left hand with both thumbs he said, "A male child wants to come, but

with a lot of luck. There is going to be a boy, but if you continue dreaming, it won't grow, you'll miscarry, but this [treatment] will get rid of the dreams so that [the child] grows well. And if the dream returns, come back to cure again." He said the left side of the left hand is for a woman and the right side for a man, which is how he knew "a male child wants to come." He then took her husband's pulses, and diagnosed heat of the fire at night and heat of the midday sun. The husband recalled seeing his house burn down at night.

The curer treated her husband first, with *copal* wrapped in *totomoxtle* (corn husk), then with a candle. He did not touch the seated man with the *copal* packet or candle. He began by crossing near the man's forehead, sweeping over the head to the upper back, then sweeping down his shoulders, down his back, and from the nape of his neck forward over the whole head. When he was done sweeping, at the word *santo* that concluded the prayer, he held the small *copal* packet to the man's lips for him to kiss. He then placed the packet in the man's right hand for him to hold, while he swept with the candle. He held the candle to the man's head, placing his left hand on the man's chest while he prayed, then swept the head, shoulders, back and head, as before. Again, at the word *santo*, the man kissed the candle. When I asked the husband how felt, he said, "This has an effect later, bit by bit [the illness] goes away."

He only used a candle, not *copal*, to cleanse the woman, "because she doesn't know where" exactly the fright occurred, despite the fact that she had named a village in Zenzontepec, and Oaxaca as the places of two frights. When questioned, he said, "If in Oaxaca, I need to know what *colonia* (neighborhood)."

He cleansed her using two different candles, praying in Spanish with the first, and in Chatino with the second.

The total cost came to twenty-seven pesos. For the woman he charged eight for heat of the midday sun, and six for dreams, and for the man, six for heat of the midday sun and three pesos for *copal* supplied by the curer. The three candles, which were supplied by the patients, cost an additional three pesos.

### **Herbs for *Espanto***

For the Chatino of Zenzontepec, *yana*, *copal* (*Bursera* spp., especially *B. bipinnata*, Burseraceae), from which the resin is extracted, is the most important plant used to treat fright. "*Copal* is very important. The *copal* smoke carries our prayers up, carries our prayers far" (Fig. 3.6).

Herbal treatments for *espanto* are the same regardless of the cause of fright. "*Espinosilla* (*Hydrolea spinosa*, Hydrophyllaceae) is for *espanto*." "Any fright?" Yes, you mix it in your hand, you mash it in water and put in on the children's heads when they get sad, and bathe them with it. You put the foam in a cup and there it comes out what the fright comes from, from a person, dog or a bull or any animal. The foam falls and out comes the figure of an animal, dog, person."

The root of *magüey de espanto* (*Eryngium globosum*, Apiaceae), is ground in water, boiled and used for bathing, for any kind of fright.

*Espinosilla* (*Hydrolea spinosa*, Hydrophyllaceae), a cold herb, "is for *espanto*. You mix it in your hand, you mash it in water and put in on the children's heads when they get sad, and bathe them with it. You put the foam in a

cup and there it comes out what the fright comes from, from a person, dog or a bull or any animal. The foam falls and out comes the figure of an animal, dog, person."

Herbs, like prayer, can be a practical way of curing fright that occurred a great distance away. For example, of *espinosilla*, one said, "We put the foam on the head and this way we cure *espanto* without going all the way to the coast [i.e., the place of the fright]."

*Tiricia* (tree, Myrsinaceae) is also used for fright (see "*Tiricia, ojo* and *espanto de niños*"). Other herbs for fright are specifically used for treating fright in children and are discussed below.

#### ***Tiricia, Ojo* and *Espanto de Niños*, Sadness, Evil Eye, and Fright in Children**

Children frighten easily and are therefore particularly vulnerable to *aire*, *ojo*, *espanto* and *tiricia*. Preventive measures are taken to protect the children. Infants always wear caps to protect them from *aire*, and some may wear bracelets of *ojo de venado* against *ojo*. Even young animals are susceptible, so a kitten may wear a red ribbon tied around its neck against *ojo*.

In Zenzontepec, only children get *ojo*. For a discussion of *ojo* in Tataltepec, that effects adults, see "Diversity in Chatino Medicine." "**Kui'ya, ojo**, is the bad effect that one [person] brings [on another]." In Zenzontepec, *ojo* is caused by the strong gaze of a pregnant woman, an angry person or a stranger, "when the children cry a lot from seeing someone they don't know." Symptoms of *ojo* include incessant crying, with fever, vomiting and green diarrhea (see "Diarrhea"). *Aire* and *ojo* are both used to refer to colicky children who cry

incessantly. "And why do the children cry?" "Sometimes they are not well, they have *aire*." "Where does this *aire* come from?" She shrugged, "But sometimes they have, and since one doesn't know why they cry... when they cry, when one doesn't know what they have, that's why we treat them this way."

*Zacate*, thatch grass, and *chile* (*Capsicum annuum*, Solanaceae) are used in combination with objects based on the sacred number seven to treat *ojo*, "when the children cry a lot." For the coastal Chatino, seven is the main sacred number. For the Chatino of Zenzontepec, fourteen is the sacred number for a man, and thirteen for a woman (see, for example, "Rezo, Prayer"), although sometimes the number seven is also used. Seven chick quills, seven pieces of baby diaper, seven points of *chile* or *picante*, and seven points of *zacate* from the four house corners, are burned in the fire. "You put fire here, and then you put [the things in] there, then you pass [the child] through the smoke thoroughly, but in a cross, six times, that's all." She showed me with her arms how to swing the baby forward and back through the smoke three times, then three times from left to right. Note that, like the curer who invoked the child's name five times when treating for fright from a dog, she also used fewer than seven times when passing the child through the smoke.

Flowers of *florifundio* (*Brugmansia candida*, Solanaceae) are used in a *limpia* (cleansing) to treat *ojo*, *tiricia*, enuresis and pain. Leaves of *bule* (*Lagenaria siceraria*, Cucurbitaceae) are also used for cleansings for *ojo*. *Limpias* with whole eggs, charcoal painted with little faces and crosses, are sometimes also used to treat *ojo*.

*Zapote dormilón* (*Pouteria campechiana*, Sapotaceae) is another plant used to treat "*ojo de muchitos*," children's *ojo*. The Zenzontepec curer who used this term was familiar with adult *ojo* of Tataltepec, which is probably why he modified *ojo* with an adjective. *Zapote dormilón* is also used for high fever (see "Fever and Heat").

The leaves of *chilillo* [possibly *Rourea glabra*, Connaraceae (Schoenhals 1988: 42)] are used externally for *ojo*, but are contraindicated if the child has fever. *Chilillo* leaves are toxic and are used to poison animals. (For another use of *chilillo*, see "*Mallugón*.")

Women are not generally regarded as healers in Zenzontepec. One midwife and one sucker of objects, both respected for their healing ability, were exceptions. However, women often treat children with ritual cures for fright, *ojo*, and sadness. One woman complained of the lack of regard for her curing, "I don't feel like curing *ojo* anymore, because one loses interest (*desgana*), it doesn't pay at all (*no gratifica nada*)."

*Mal de ojo*, conjunctivitis, and trachoma, a chronic conjunctivitis that can lead to blindness, should not be confused with *ojo*, which can be considered a type of fright. "But they say clearly that it is from *ojo*, that one is frightened by *ojo*." Treatments for *mal de ojo* are topical, applied directly to the affected eye. The fresh sap of a vine (not collected), *rompecapa*, also called *bejuco de corona*, is for "*mal de ojo* and eye pain." After cutting a section of the vine, the cut ends are held up to retain the sap, until the patient lies down and the fresh sap can be released directly into the eye.

*Tiricia* (sadness) has many synonyms: *tristeza*, *trinsona* and *pesadumbre* (grief). People disagreed on the definitions of *tiricia* and *espanto*, and on the plants used for each. Some felt *tiricia* and *espanto* were synonymous, "Yes, one gets sad when one has fright." Some therefore used *tiricia* for "sadness and fright," in children, while others insisted *tiricia* was only for sadness. One woman used *casahuate* (*Ipomea murucoides*, Convolvulaceae) for fright, while another said it was only for sadness. Indeed, the most common reply to the question how does one know if one has fright, was, "one gets sad and sleeps during the day." This controversy over definitions may be regional, much as are beliefs regarding *ojo* (see section on "Diversity in Chatino Medicine").

*Tiricia* (*tilicia* in Nopala) leaves (a tree in the Myrsinaceae with the same name as the illness) are boiled and used for bathing, or crushed in water or mezcal and rubbed on, for *espanto* and/or *tiricia* (see below). "The child hugs the tree and the tree dies." "If the tree dies that means [the child] will get better."

*Barba de viejo*, (*Clematis* sp., Ranunculaceae) is used to as a bath for swelling and *espanto de niños*, "[when] they don't eat well, are weak and thin."

Dew of *casahuate*, (*Ipomea murucoides*, Convolvulaceae) is used to treat fright and sadness in children, "when there is dew, when it has drops in the morning. Because here we believe that when the children are frightened they get thin, and with this they get better, since before there was no [allopathic] medicine." On another occasion the same woman elaborated, "*Casahuate* tree (*Ipomea murucoides*, Convolvulaceae, a tree) is for *susto* (fright), when the children get thin and sleep a lot, sleep during the day, from fright from an animal or people. One cleanses [the sick child] with the flower or the leaf, and then the



child hugs the tree. One goes to the river with seven flowers of *casahuate*, or seven branches of *plátano castilla* (*Musa acuminata*, Musaceae) and one by one the child throws [the flowers] into the water, waits until [the flower] can no longer be seen, [then] throws another, until they're all finished. Seven days [the child] hugs the tree and goes to the river. Later the tree dies, dries up. That's how my grandmother cured." C. wiped a tear from her eye. She demonstrated a *limpia* (cleansing), starting from the head, sweeping the whole body, the arms, from top to bottom "and then one puts [the leaves] here [at the nape of the neck] and the child lies down [on the leaves]."

*Casahuate* (*Ipomoea murucoides*, Convolvulaceae), has several other uses. Branches of *casahuate* are soaked in water, and the infusion given to pigs to drink and used to bathe them, "when they get sad and don't want to eat." The young shoot with seven leaves is boiled and the decoction used as a wash for mastitis, "when women have a carbuncle (*grano*) on their breast when they have an infant, [that carbuncle] gets very inflamed and bursts."

*Espinosillo del cerro* (*Hydrolea spinosa*, Hydrophyllaceae) "is for children when they have *trinsona*, *tristeza*, *espanto*, and they sleep a lot during the day. [The leaves] are rubbed and blown on the child [with water or *mezcal*], or [ground with water] for a bath. Blowing (*sopla*) *mezcal* on the patient's head, back and chest is a common part of the *limpias* (cleansing ritual) for fright among the Zapotec, less commonly employed by the Chatino. (Blowing *mezcal* is also mentioned in the section on curing fright by a dog, above.)

## **BLOOD AND FUERZA**

Blood, *tene*, *sangre*, is mentioned in many different contexts in Chatino medicine. Blood is equated with strength, *shilee'*, *fuera* (*shilee' ji'i yunnguti*, *fuera del cuerpo*). "The *fuera* of the body is the blood, the blood that circulates in the whole body. The *fuera* is the circulation of the blood. Blood comes from the heart. The heart makes the blood circulate. When one's heart hurts they say one can't breathe."

Food is the source of the blood. "In order to stay well and healthy, [one has to] take care of the whole body, through nutrition. Nutrition (*alimentación*) is the *fuera* (strength) of the blood, by way of nutrition the whole body functions. Then the person is well and healthy."

Frequent dreaming is the chief symptom when the blood becomes "weak." "When the blood is weak, dreams are revealed a lot, and when the blood is strong dreams are not revealed. It's not bad that dreams are revealed, but if dreams are revealed a lot one starts to think a lot about what will happen and that's bad. What happens to me when I sleep is that because of some dream my heart starts to jump (palpitate), and that's bad. Doesn't that happen to you?"

Blood and *fuera* are also equated with the sperm, which represents male potency and strength. This quote, which also appears under "Heat of Pregnancy," is repeated here to illustrate this meaning of blood and strength. "When a woman is pregnant, the man is struck by heat, [he becomes] *chiple*, anemic. The women do *maldá* to the man when he is using her daily, the strength is depleted (*se acaba la fuera*), the blood is depleted. A woman is *mañosa* (crafty, cunning) if the

woman leans on her husband for support when she is pregnant. Then the man gets sick, gets tired, diarrhea, stomach ache, fever." "He gets skinny, the blood [and] sperm are depleted."

One man, while discussing *antojo* (see "*Antojo*, a form of envy") said fungal infections of the skin come from the blood, "because a fellow with a fungus on his arms was accidentally cut with a machete, bled and was healed. When the horns of the cows are cut they bleed, and sometimes it is good [for them] sometimes not."

Curers pay close attention to the state of the blood in order to diagnose. A rapid pulse is indicative of heat and a slow pulse indicates cold. "When the blood is weak one dreams ugly (has nightmares) and feels tired (*cansancio*)." "It's not the same [as heat from *jo'o kuitsa*, the sun god], heat that comes from *jo'o tselayu* (god of the world). Those that know to pulse, those that divine what sent the illness, they say that the blood speaks. Then no one but the pulser (*el pulsea*) can distinguish." The speaker was making the point that curers rely on the pulse to make fine distinctions, since *jo'o tselayu* (world god) and *jo'o kuitsa* (sun god) are essentially synonymous. ("What is *jo'o tselayu*?" "They say 'saint' or 'world saint.'" "Can he cause illness?" "It's the same, because if [an illness occurs] in the day, they say one is grabbed by (*agarra*) heat of the sun." (See also "Heat and cold" and "*Espanto*" for discussion of the pulse.)

### ***Mallugón, Contused Blood***

*Mallugón* refers to contusions and bruises resulting from trauma, from falls and physical assault. *Mallugón* is a colloquialism substituted by the Chatino

for *magullón*. Sometimes reference is made to *sangre mallugada*, contused blood. Pain from contusion can persist long after visible signs of injury are gone, "when the moon is young the bruises (*golpes*) start to hurt again."

The root of *camoreal morado* (*Geranium* sp.) is used for *mallugón*..

The leaf of *sávila*, *Aloe vera* (Liliaceae/Aloeaceae), is sliced lengthwise and applied warm to injured areas for *mallugón*. "When one falls and is bruised (*se malluga*), here, here," C. pressed my chest and arm firmly, "one wraps the arm, (as) when one falls from a horse. It cleans the blood one has."

Leaves of avocado, *aguacate* (*Persea americana*, Lauraceae), are boiled with salt and taken as a tea for *mallugón*. "If someone has a *mallugón* where he was hit by an ugly drunk, one drinks it and the contused blood (*sangre mallugada*) goes out."

Pineapple vinegar is used for *mallugón*, and is taken internally daily for red dysentery and bladder infection (*mal de orinas*).

Lemon juice, fresh and as a tea, has many uses. *Ojo de pescado*, "fish eye," is a skin eruption (*grano*) that remains from *mallugón* or sometimes it comes out like a dry lump, like this," S. pinched some skin to show me. "This acid gets rid of it, one scrapes [the skin] a little and applies [the juice] and then [the *ojo de pescado*] is destroyed.

*Maguey de tobalá* (*Agave potatorum*, Agavaceae), mentioned earlier for *pasma*, is boiled and drunk for bruises, and for cough, "when one's neck has been injured."

### **Desconcertadura**

Although not explicitly stated, sprains, *desconcertaduras*, may be considered a class of contused blood. Toxic leaves of *chilillo* are used externally for sprains [possibly *Rourea glabra*, Connaraceae (Schoenhals 1988: 42)]. The leaves are smeared with lard, then passed through *ocote* (*Pinus* sp.) smoke, and applied externally to the affected part. (For additional uses, see "*Tiricia, ojo* and *espanto de niños*.")

Hot medicinal plants are used for soaks after childbirth. Although not indicated for *mallugón*, these plants may also have wound healing properties.

### **Tísico**

*Tísico* refers to consumption, an illness in which people "get dry" and thin, *ngu' ui'*. "That family ended, V. died, F. died, F. went to the coast and there he got thinner and thinner, from thinness he died they say, and *tisón*." I include *tísico* here, as dryness may be a reference to insufficient blood.

### **Fuerza and cuerda**

Men wrap their waists with a long black cloth sash, the *cendera* (bastardized, from *ceñidura*). Women bind their waists with a *soyate*, *jakua jne*, a woven belt made of *tule* (*Scirpus* sp.) and held by the *cendera* which wraps over the *soyate*. *Jakua jne* literally translates "four fingers" for the width of a *soyate* is the width of four fingers held together. When asked why they bind the waist, the Chatino reply "*da fuerza*, it gives strength," "*para tener mas fuerza*, to have more strength, in order to lift things." Among the Purépecha of Michoacan, "*fuerza* is replenished by food and air, and is also an innate quality acquired at

birth that is slowly depleted with age (Young 1981: 46). In Tataltepec Chatino, the Spanish loan word *frza* is used in this context.

Chatino *fuorza* seems analogous to Chinese ancestral (*Yuan*) *qi* (Japanese: *ki*), which is stored in the kidneys or near them, in the *Ming Men* or Life Gate area (level with the L-2 vertebra and the waist). The Japanese kimono has a special padded belt that covers and protects the kidneys and *ki*. Similarly, the *soyate* binds, warms and guards the mid and low back from chills and depletion of *fuorza*. Women and men carry heavy loads of firewood on their backs, so the cloth sash for men and, for women, the cloth sash and *soyate* offer protection from mechanical abrasion by protruding wood. Women, who endure frequent pregnancies and childbirths, have the extra support of the *soyate* to protect the low back and prevent strain.

"*Why do they wear the soyate?*" "The *venteadura* gets loose, the uterus gets loose when one doesn't bind and when one carries heavy loads, or falls and gets a bruise. When one walks or carries heavy loads, going up and down on the path the bones get out of alignment (*desvían*)."

"I got pimples, blackheads in the face, here and here. Here they say that it's because of back pain." "*Do you have back pain?*" I asked. "I did, not anymore." "*And why does one get back pain?*" "Because I carried too much, as much as I could bear. Here they say it's from when one starts carrying heavy loads when one is small, from that, and the strength is depleted (*acaba la fuorza*), one doesn't have *fuorza* (strength) anymore to carry very heavy [things]."

"*Nga'nale*, when one uses *fuorza*, for example when a baby is coming, in order to give birth.."

**Yä kiëë kikuë, levantó la cuerda**, or simply *cuerda*, refers to a disorder of the tendons resulting from overwork, the main symptoms being low back and lower leg pain in men, and prolapsed uterus and cough in women. *Venteadura* is a term used when hard work, *cuerda*, leads to uterine prolapse.

"When a person exerts himself (*se enforza*) in order to work, lifts heavy things, lifts a rock, works with a hoe, then one uses a lot of *fuera* (strength). The man's *fuera* gets weak (*se desmalla*), [he] doesn't feel like working, pure muscle pain, his [upper] back hurts (*espalda*), his calves, his [low] back (*cintura*). The women, the women's type is different, from working in the kitchen, carrying water, grinding, their uterus descends and they get a cough." His wife said, "Not from coughing so much the uterus descends?" Justino replied, "But it's from *cuerda*, pues, from working a lot."

A fifty-seven year old fat woman had a cough for two months that lingered after a common cold. "Would it be because I work a lot? Because I work a lot, I make pots and comals. Not from that, from *cuerda*, would it be?"

*Cuerda* is occasionally associated with *bilis* or *muina*. For example, one Mixtec curer who lived in Zenzontepec and sold herbs from the Mixteca on fiesta days offered *yukutuche* (*Heimia salicifolia*, Lythraceae), also called *yerba de las cuerdas*, for *cuerda* and *bilis*. *H. salicifolia* is considered a "delicate" herb, to be taken with caution. Various injunctions apply to its use. The person cannot leave the home or work for three days, after which she must eat a black chicken. "The next day it affects, my hands hurt, the whole body, for three days." One woman described the effects of *H. salicifolia*, "The whole body hurts, even the fingernails hurt."

The following is the case of a man who took *yukutuche* for *cuerta*. A sixty year old man complained of severe tinnitus and right-sided mid and low back pain, extending down the sciatic nerve to the foot, with right knee pain for one year. His hearing impairment began five years ago. One year and two months earlier he experienced right sided paralysis of his face and leg. His right lower abdomen and lower leg, both hands and arms were cold. "I feel like water is boiling at the back of my head, like a bee pushing at the back of my head. It goes 'sa sa sa' when I sleep or when I walk a lot. My right ear makes noise like a little bell or like a bottle of water when one goes like that," he tapped with his hand on the opening of a bottle. My left ear sounds like a clock ticking.

"I can't use *fuera*, that's when [my pain] gets worse. I feel very cold. When I use *fuera* my whole body twists. I used [it] bad, the *fuera*, I used a lot of *fuera*. *Encordadura*, one uses a lot of *fuera* and then the *fuera* passes. *Descuerdadero* is when the body gets soft, the body is useless, damage is already being done." His pulse was slow, three beats to my breath, his tongue trembled, and was coated with thin foamy white fur. The first third of his tongue was covered with red spots. I asked his wife how she understood his illness. "He was in the sun, from one *cuerta*, some nerve, from work, he gets tired, he falls when he uses *fuera*."



## **DIVERSITY IN CHATINO MEDICINE**

Portions of this section on intra-cultural diversity in Chatino medicine were presented at the 18th Annual Conference, Society of Ethnobiology, Tucson, Arizona, March 15-18, 1995. I repeat some information on Zenzontepec that appears in Chapter 2 and in preceding portions of this chapter for the purpose of contrasting Zenzontepec practices and beliefs with those of Tataltepec.

### **Introduction**

The ethnic group based on linguistic affiliation is the most common designation used for delineating ethnobotanical and ethnomedical studies. Many such studies are based on a single community, despite considerable cultural diversity within the ethnic or linguistic group. The National Indigenous Institute (INI) of Mexico has recently published two volumes dedicated to the medical practices of the fifty four indigenous groups of Mexico. Interviews with traditional healers from diverse regions within a given ethnic group are presented as an ethnographic unity. In the section on Chatino medicine, for example, healers from Juquila, Nopala and Zenzontepec all contributed (Zolla 1994, Vol. 1: 105-123). Comparative studies of divergent use of the same flora as a basis for identifying important medicinal plants have also used different ethnic groups as the unit of comparison (e.g., Bye 1986).

Anthropologists have paid attention to variation of medical beliefs within populations. So, for example, Susan Weller (1983, 1984) and Barbara Tedlock's (1987) studies looked for variation of knowledge between individuals (e.g.,

healers and non-healers) in a given community (cf. Young 1980, 1981). Michael Logan (1979) compared ethnomedical beliefs between two Cakchiquel villages in Guatemala that differed in their explanations of *susto* causality and his approach is closest to the one I take here. I argue that ethnomedical and ethnobotanical studies of ethnic groups need to address intra-group variation in order to be useful and accurate. Berlin and Berlin (1994) are an exception, in that they carefully noted the locales and linguistic variation from which medicinal plants were collected and medical information recorded.

Medical concepts presented by ethnic group are not always generalizable to the population. For example, in the INI study, of the nineteen concepts discussed for Chatino medicine (*alferecía*, contraceptives, *espanto*, *caída de la mollera*, *desnucamiento*, back and waist pain, pregnancy and childbirth, *embrujo*, *enmadradura*, fractures, fever, *mal de orín*, animal stings and bites, measles, stomach ache, *mal de ojo*, *maldición*, dysentery, *aire*, sprains), five (*caída de la mollera*, *desnucamiento*, *embrujo*, *enmadradura* and *maldición*) were terms not mentioned at all in Zenzontepec. Some concepts, such as *embrujo* with *maldad*, and *enmadradura* with *latido*, overlapped to some extent with Zenzontepec concepts. Many more concepts differed in their definitions and specific treatments.

### **Field Sites**

The comparisons I draw here are based on fieldwork in two Chatino municipalities in the Sierra Madre del Sur of Oaxaca, Santa Cruz Zenzontepec in the district of Sola de Vega, and Tataltepec de Valdez in the district of Juquila

(Fig. 1.1). As mentioned in Chapter 2, Zenzontepec is a large municipality with twenty-three communities. Tataltepec is a small municipality with only four villages pertaining to it. El Cucharal, a village pertaining to Zenzontepec, was interesting from the perspective that medical and other cultural features of both Zenzontepec and Tataltepec converged there. All the communities pertaining to Tataltepec speak the Zenzontepec dialect. Only the village of Tataltepec itself speaks the Tataltepec variant.

In relation to Tataltepec, Zenzontepec is situated twelve hours of brisk paced walking from Tataltepec, across rivers and mountainous terrain. In Zenzontepec, women carry with a tumpline across their foreheads. In contrast, women in Tataltepec carry goods on their heads. In Zenzontepec, the *bule* (*Lagenaria siceraria*) is used primarily as a water gourd and the large tortillas baked on a large comal fit perfectly into the woven palm tenate.

Tataltepec is a coastal community in the Sierra Sur foothills at an elevation of 300 m. above sea level. Sandy soil, abundant coconut and the use of palm as a building material are evident. The river features prominently in Tataltepec life. Tataltepec is only two hours from pavement and about three hours from the coastal road to Puerto Escondido, Pinotepa Nacional and to outside markets and products. One third of Tataltepec's inhabitants are mestizo. Women in Zenzontepec never cut their hair, while short hair is fashionable among women in Tataltepec. The *tenate* (a woven palm basket used to hold tortillas) is not used in Tataltepec. In Tataltepec smaller tortillas baked on a small comal are placed in a *bandeja*, the cut off bottom of a squash gourd.

## Medical Beliefs

Zenzontepec and Tataltepec differ in their medical beliefs and uses of plants, as well as in other customs and aspects of material culture. While fear and distrust are features of both Zenzontepec and Tataltepec, they manifest differently in each. *Espanto* is a common concern in both communities, but the causes and treatment of *espanto* are different for each.

In Zenzontepec the principal healers are men who cure by prayer with copal and candles. Curers in Zenzontepec are not usually herbalists and there is broad knowledge of medicinal plants in the general population. Long distance healing is common in Zenzontepec and often takes place in the absence of the patient. When a *limpia* is done, the person being treated is fully clothed (Fig. 3.4).

In Tataltepec, *espanto* is often treated by bathing the patient, who stands or sits, clad in underwear, with mashed or boiled herbs for air such as basil (*Ocimum basilicum*) and rue (*Ruta chalepensis*) (Fig. 3.7). Both men and women are curers (Figs. 3.7 and 3.8). Life in Tataltepec is increasingly sedentary due to ease of access. Use of wild plants for construction, fuel and medicine is declining. The healers are few and aging and have much knowledge about plants that few young people are interested to learn.

In Zenzontepec, *brujos* are often blamed for illness. Suspected *brujos* may be killed. This witchcraft is a personal, though invisible, form of attack. In Tataltepec, violence is frequent—"cada ocho días," every week, in their words, someone is killed. Machine guns and ammunition are ubiquitous because of the

heavy marijuana trade. In contrast to Zenzontepec, *brujos* in Tataltepec tend to be impersonal. Whatever *brujos* were active in the past have all been killed. Now a *bruja de noche* prowls in the form of a small kitten or puppy, frightening both children and adults at night. The *bruja* causes one to experience heaviness of the whole body and become immobilized by fear. The *bruja* comes frequently now, according to some. The *matlacigua* and balls of fire that are *brujos* who are out and about, are popular Mexican mestizo themes that are found in Tataltepec.

*Ojo* (the eye, evil eye) in Zenzontepec affects only children, who are vulnerable to the strong gaze of an adult, especially an angry adult. Women are the primary curers of *ojo* in Zenzontepec. An egg is painted and used for *limpia*, or *Brugmansia candida* flowers are used for the ritual cleansing. Herbs may also be applied to the feet or stomach to relieve the heat, since *ojo* is characterized by heat.

In Tataltepec, adults suffer from *ojo*. People in public office who are often exposed to the strong gaze of others are especially vulnerable. The *Presidente* (municipal president) was frequently treated for *ojo*. His diarrhea, caused by worms (my diagnosis, as the diarrhea was cured by a single dose of albendazol, a vermifuge), was attributed to *ojo*, as well as other symptoms related to the overconsumption of alcohol, another consequence of holding office. His *ojo* and *muina* (anger) were treated as *espanto*, and there seemed to be no clear distinction between these. The *Presidente* often ran into the *bruja de noche* as well, another cause of *espanto*.

## Medicinal Plant Use

Variation in medicinal plant use is related to variation in plant availability and habitat diversity. Many plants that occur in Tataltepec do not occur in Zenzontepec, and vice versa, and are therefore known only to the local residents. Accompanied by a person from Zenzontepec or a person from Tataltepec, a hike through the same forest elicits very different plants. For example, a person from Tataltepec pointed out a fern to cure *espanto de bruja de noche*, called *cabello de la bandolera* or witch's hair (*Campyloneurum angustifolium*), that is not used in Zenzontepec.

Since medicinal plant use follows the medical concepts for each region, plants for *espanto de bruja de noche* are only found in Tataltepec where such a cause of illness exists. The Chatino of Zenzontepec are preoccupied by dreams and *chaneques*, spirits of places, that cause fright, so plants are found there that treat these causes of illness.

When the same plants are used, they are given different names and may have different uses, or different plant parts may be used. An example is *Tecoma stans* (Bignoniaceae), called *tronadora* or *yakieki'e* by the Chatino of Zenzontepec, and used fresh for *latido*. The plant is considered bitter and cooling. The same plant in Tataltepec is called *chocolatillo*, and is used for the pain of childbirth. The root is considered to be warming and is taken boiled as a tea. The leaves are also boiled and used to bathe children with measles. Some people in Zenzontepec use the name *chocolatillo* to refer to *Hyptis* sp. (Lamiaceae), another bitter and cooling herb for *latido*. In Tataltepec the name *tronadora*,

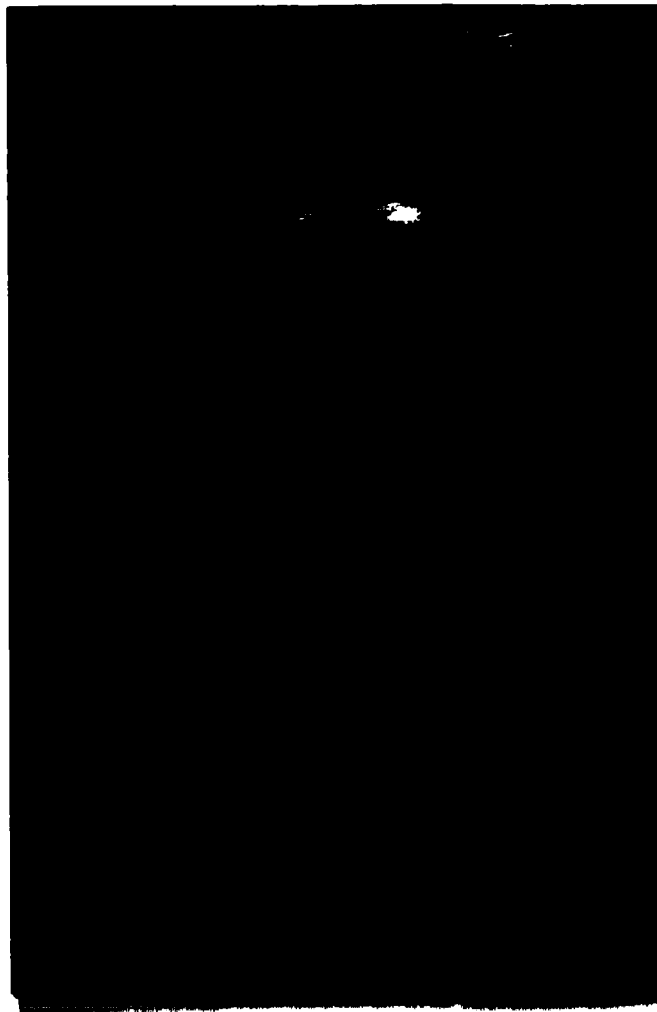
**kyishe xculu**, is given to the same *Hyptis* and which is used for *reúma* or joint pain.

Neither of these communities is completely isolated from the other. For example, the treatment for fright by a dog described earlier in this chapter was performed by a healer from Zenzontepec in Tataltepec on a Tataltepec child.

In addition to the differences I found between Zenzontepec and Tataltepec, I was surprised to find a border region where these two Chatino cultures intersected. In El Cucharal, a discussion ensued between brothers about *ojo*. One brother expressed the Tataltepec view that *ojo* could be gotten by adults, while the other insisted that only small children could get it. I realized that they were both right, within the appropriate intra-cultural contexts.

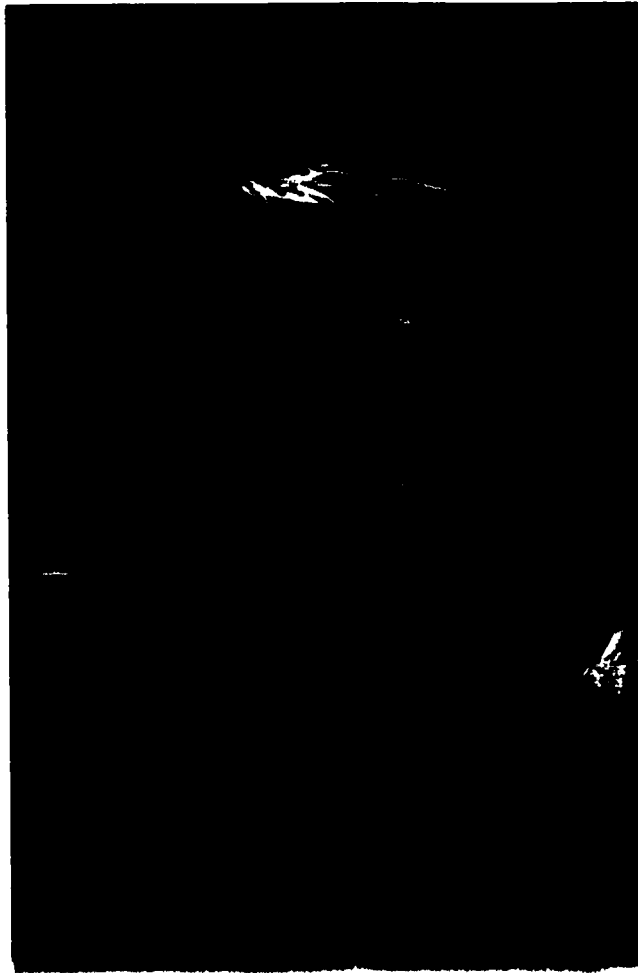
El Cucharal was also a boundary region in terms of material culture. As in Tataltepec, the *bandeja* was widely used, but a *tenate* on the same table was also used. El Cucharal had unique medicinal plants I had not seen either in closer proximity to Zenzontepec or in Tataltepec, demonstrating yet again the tremendous variation in cultural knowledge that accompanies the tropical biodiversity.

While not the focus of my dissertation, I consider the diversity of tropical habitats and cultural knowledge to be an exciting area worthy of additional study. A project addressing cultural variation and habitat diversity within a given ethnic group could make a unique contribution to our appreciation of biodiversity and man's relationship to it.



**Figure 3.2: Sores heated with lard.**





**Figure 3.3:** Sores wrapped with *hoja de pasma* smeared with *copal* resin (*Bursera bipinnata*, Burseraceae) and heated over *ocote* (*Pinus* sp.) smoke.

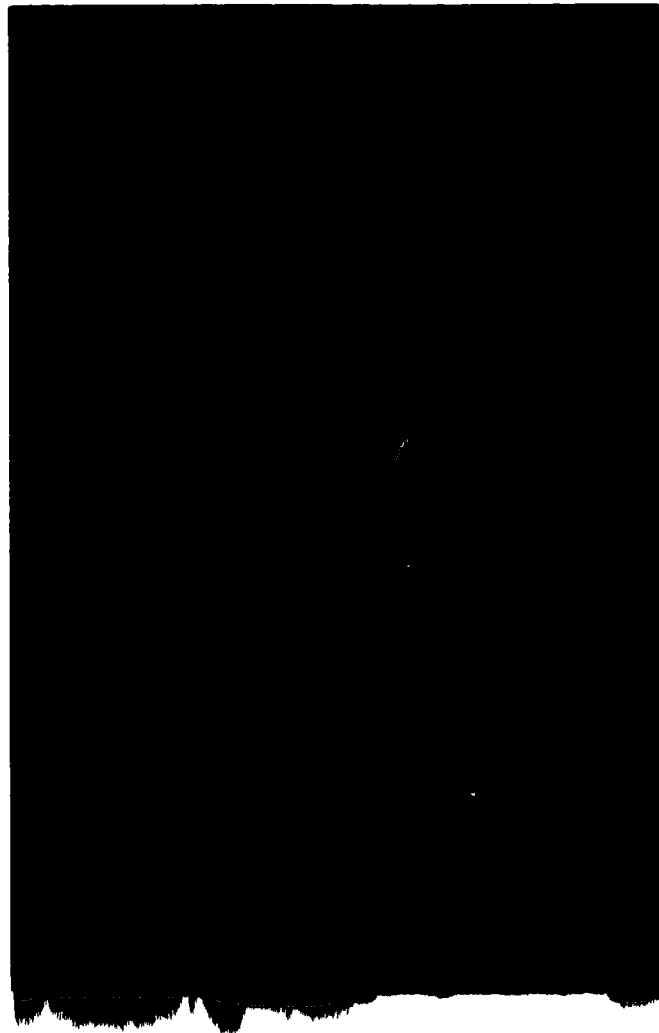


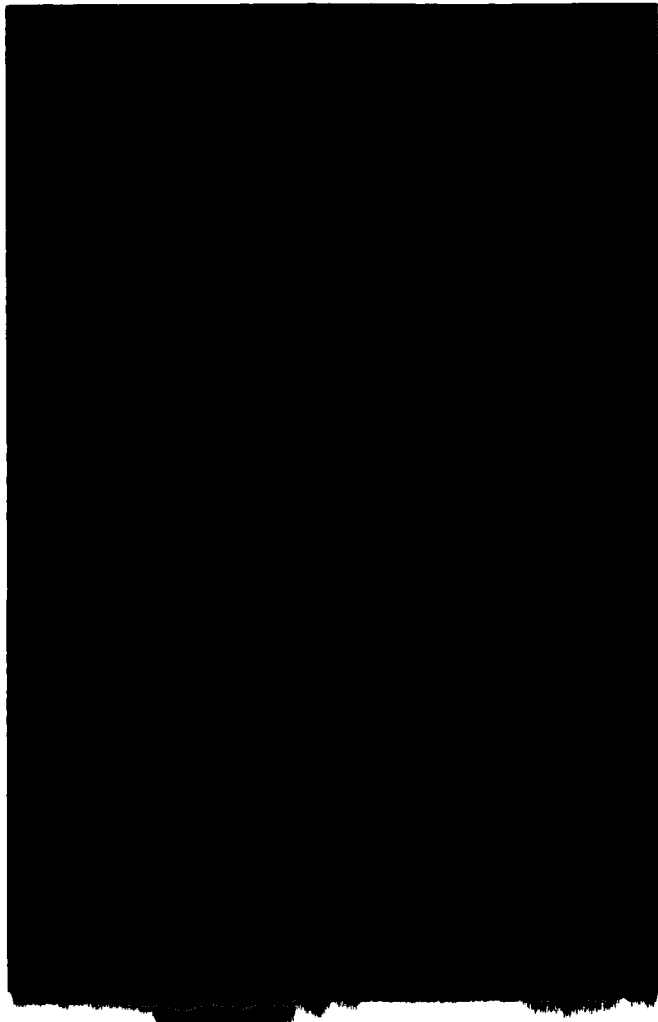
Figure 3.4: *Limpia* with a candle in Zenzontepec.



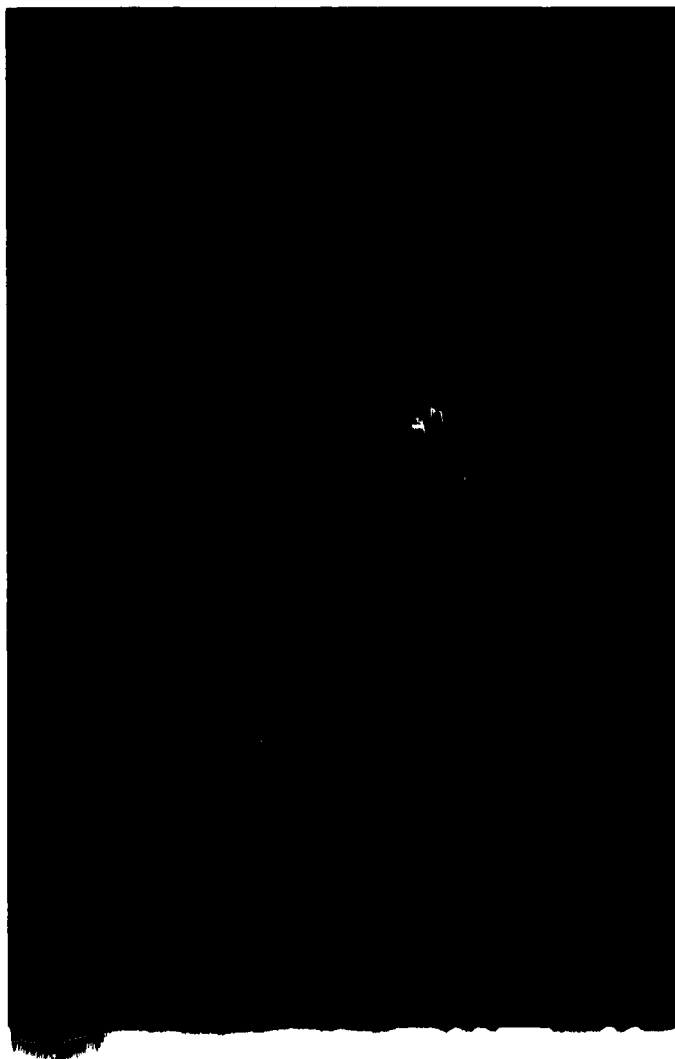
**Figure 3.5:** Healer praying. Note candles, white flowers and frying pan for *copal* set on ground before him.



Figure 3.6: *Copal* smoke carries prayers far.



**Figure 3.7:** A Tataltepec woman healer treating *espanto*.



**Figure 3.8:** A *madrina de la enfermedad*, godmother of the illness, blesses a dying woman in Tataltepec. A male curer would be called to perform a similar rite in Zenzontepec.

## **Chapter 4: Chinese Medicine**

### **INTRODUCTION TO CHINESE MEDICINE**

"Chinese medicine" in this chapter refers to the professionalized medicine covered in text books and taught in schools of Chinese medicine in China (Sivin 1987: 3-4, 23) and abroad (e.g., United States, Europe, Australia, Israel). Aspects of Chinese folk medicine are discussed in Chapters 5 and 6.

According to classical theory, traditional Chinese medicine (TCM) is structured by an amalgam of systematic correspondences and eight entities, as the primary organizing principles (Kaptchuk 1983: 50-76, 178-200, 343-357, Sivin 1987: 20, Unschuld 1985: 54-55). The theory of systematic correspondences refers to a five element or five phase scheme, in which fire, earth, metal, water and wood each correspond to five internal organs (also referred to as the "solid" or *yin* organs) which are paired with five "hollow" *yang* organs of lesser diagnostic importance. An overview of the theory of systematic correspondences can be found in Table 4.1. The entire body is arranged as analogues of the five phases and the five principal organs. For example, illnesses affecting the knees (not shown in Table 4.1) and ears, such as tinnitus or deafness, correspond to the kidneys, while most eye problems are related to the liver. The eight entities are summarized in Table 4.2.

Each of the organs, in conjunction with the eight entities, is associated with a group of symptoms or pathologies that stem from the traditional Chinese understanding of physiology and organ function. Similar to Chatino medicine,

the spleen is associated with cold, and the liver with heat. In Chinese medicine the spleen, assisted by its paired hollow organ, the stomach, is responsible for the digestive function. The spleen dislikes cold, hence excessive intake of foods raw or cold in nature may injure spleen function, also referred to as spleen *qi*.

Damaged spleen function (deficient spleen *qi*) manifests as deficiency and cold, with associated symptoms such as shortness of breath, pale skin coloration, white vaginal discharge, loose stool with undigested food particles. Other organs tend towards excess and heat. For example, imbalances of the stomach and liver functions rarely manifest as deficiency and cold. Excess consumption of spicy hot and greasy foods may cause stomach heat, manifesting as constipation, or may cause liver heat and wind to ascend to the head causing migraine headaches or stroke.

### **CHINESE MEDICAL DIAGNOSIS**

A single symptom taken alone is rarely diagnostic. All the presenting symptoms are taken into consideration in order to reach a diagnosis. The holistic approach of Chinese medicine can be contrasted with the Western diagnostic approach, exemplified by a doctor who once exclaimed to me, "In medical school we were taught to ignore the irrelevant symptoms, and [Chinese medicine] teaches that everything is important." Farquhar (1994: 2), in acknowledging this holistic inclusive aspect of Chinese diagnosis, finds an additional element of patient empowerment, "the doctor does not have the power to reject any sign reported by the patient; patients... retain a sense of being the experts, the authority of last resort, on their own illness."



Diagnosis is traditionally considered to include four main methods for garnering information (*si zhen*, four diagnoses), involving all the practitioner's senses: observation (looking, *wang*), listening and smelling (*wen*), questioning (*wen*) and palpation (*qie*). Observation includes observation of the patient's overall demeanor (spirit, *shen*), especially as reflected by the eyes and gaze, skin and face color and condition, body appearance, including the gait of the patient, body size, weight and posture, observation of excretions, including phlegm, vomit, urine and stool (excretions are usually described by the patient), and tongue diagnosis.

Tongue diagnosis is an important component of diagnosis that includes observation of the color and shape of the tongue body, including fissures, cracks, "thorns," red or dark spots, and the color and distribution of the tongue fur. In general, a red tongue and yellow fur are indicative of heat while a large pale moist tongue with teethmarks and thin white tongue fur are indicative of cold. Heat can be due to excess (of *yang*) or to deficiency (of *yin*). A bright red tongue with deep fresh cracks would indicate excess heat, while a dry thin red tongue with no or little fur is a sign of deficient heat. The regions of the tongue correspond to various organs, and discoloration or fissuring of a given area suggests involvement of the corresponding organ (Fig. 4.1).

*Wen* (second tone), a single word which refers to both listening and smelling, comprises a second line of inquiry. *Wen* includes listening to the resonance of the patient's voice, and for presence of bodily sounds such as cough, wheezing, breathing, burping, borborygmus. Smelling includes bodily odors,

such as the distinctive odor of uric acid, a sign of kidney disease, sweat, halitosis (bad breath), and smells of excretions (usually described by the patient).

Questioning or interrogation (*wen*, fourth tone) traditionally includes the "ten questions" covering the various body parts and organ systems. The ten areas of inquiry are listed as: 1. hot-cold, 2. sweat, 3. head and body, 4. flanks and abdomen, 5. ears and eyes, 6. diet, food preferences and cravings, 7. sleep, 8. bowel movement and urination, 9. gynecology, and 10. pediatrics, including history of communicable diseases and immunity, motor and physical development. These are posed to the patient as questions: Do you feel hot or cold? Do you prefer hot or cold drinks? Do you sweat a lot? Do you sweat during the day or at night? Kaptchuk (1983: 138-177) lists a slightly different version of the "ten questions," substituting pain for flanks and abdomen, and medical history for pediatrics. For an example of a typical Chinese medical intake procedure, covering most of the "ten questions" in greater detail, see Table 4.3.

Palpation (*qie*) includes palpation of the skin, hands and feet, for hotness or coldness, dryness or moistness, and presence of swelling, abdominal palpation for pain, lumps or ascites (fluid accumulation) and pulse diagnosis. Pulse diagnosis, together with tongue diagnosis, is central to Chinese medicine. Chinese medicine, developed long before stethoscopes, wristwatches and sphygmomenometers, placed considerable importance on the pulse. Traditionally, twenty-eight pulse qualities are recognized. These can be summarized as relating to speed (fast, slow), strength (full, weak, excess, deficient), depth (superficial or floating and deep), rhythm (regular, missed or

skipped beats, irregular) and the quality of the pulse. The most common qualities observed clinically include a bowstring pulse, described as being like a taut violin string, and a slippery pulse, like pearls on a tray. A bowstring pulse indicates a liver condition, while a slippery pulse indicates dampness, often associated with the spleen.

Three pulse positions are palpated for each hand using the practitioners second, third and fourth fingers, representing the three main divisions of the body into chest (lung and heart), upper abdomen (stomach and liver) and lower abdomen (kidneys and intestines). The patient's right sided pulse relates to *qi*, and includes the lung, spleen and stomach, and fire or *yang* aspect of the kidney, also called the life gate (*ming men*). The patient's left sided pulse relates to blood, and includes the heart, liver and gallbladder, and water or *yin* aspect of the kidney. (Table 4.4) Some practitioners include the small and large intestine in the third position, together with the kidneys. The small and large intestine are the corresponding "hollow" organs of the heart and lung, on the left and right hands, respectively.

### ***QI* AND BLOOD**

*Qi* and blood are two concepts central to Chinese medicine. *Qi* is a complex term with many referents. *Qi*, often translated as energy, is also a substance, that like blood, flows in distinct pathways (meridians) and connecting vessels (*jingluo*), that link the meridians and acupuncture points (*xuwei*) on the body surface with their corresponding organs in the body interior. *Qi* also refers to organ function as in deficient spleen *qi*, deficient kidney *qi*, deficient lung *qi*.

In addition to the *qi* of specific organs, and the meridian *qi*, there are several other types of *qi*, *wei qi*, *yuan qi*, *jing qi* (also referred to as *jing*), *zong qi* and *ying qi*. *Wei qi* is the protective *qi* that circulates in the skin and muscles and is regulated by the lungs, to protect the body from external invasion by the six pathogenic factors (heat, cold, wind, etc.). *Yuan qi*, original or source *qi*, stored in the kidneys, is the inherited propensity for health or illness, and is gradually depleted as a person ages. *Jing qi*, or essence *qi*, relates to the body's innate constitution and fertility, as well as the base substance from which organ and meridian *qi* and blood are derived. *Zong qi*, ancestral *qi*, associated with the chest, refers to the energy acquired by food, drink and breath, that to some limited extent, replenishes the *yuan qi* throughout life. *Ying qi*, nutritive *qi*, is the product of digestion that sustains the body and is transformed into blood and post-natal *jing qi*. Some conceptual overlap exists between different types of *qi*, such as between inherited *jing* and *yuan qi*, post-natal *jing* and *ying qi*, or between *ying qi* and *zong qi*. Chinese medicine is characterized by a high tolerance for ambiguity. Context gives clarity and meaning to any given concept, often expressed in relative terms, as in contrasting *yin-yang* pairs. Hence *jing* is *yin* relative to *qi*, yet *yang* relative to the blood. Other types of *qi* are *gu qi* (grain *qi*, from food), *kong qi* (air), *zhen* or *zheng qi* (the normal, overall, undifferentiated *qi* of the body).

Pathological functioning of *qi* manifests as *qi* stagnation, *qi* deficiency (or insufficiency), *qi* collapse, and *qi* rebellion (Kaptchuk 1983: 39-41). Stagnant *qi* is associated with the liver, which is responsible for the unobstructed flow of *qi* in the body. Pain in general is often considered to be due to stagnant meridian *qi*. *Qi* deficiency, which can be associated with any organ, is most often associated

with organs that are vulnerable to attack by cold, such as the lungs, spleen, and kidneys. *Qi* collapse relates to the spleen's function of holding the organs in place, stemming from the spleen's responsibility for the health and function of the muscles. When the spleen *qi* collapses, organ prolapse results. Rebellious *qi* refers to stomach *qi* not descending, resulting in hiccups, burps, and vomiting.

*Qi* is *yang* relative to blood, which is a *yin* energy-substance. "Blood is the mother of *qi* (*xue wei qi zhi mu*) and "*qi* is the leader of the blood (*qi wei xue zhi shi*)," are the classic phrases used to describe the inter-dependant relationship between the two (e.g., Hebei Yi Xueyuan 1980, Vol. 1: 21). In other words, the circulation and free flowing of each depends on the adequate quantity and function of the other. This relationship has therapeutic relevance as well, for when the blood is stagnant, as in the case of menstrual blood containing clots, or a sharp pain in a fixed location, herbs for motivating both *qi* and blood may be prescribed. Three main organs are associated with the blood: the liver, spleen and heart. The liver stores blood, the spleen holds the blood in the vessels, the heart "rules the blood" and is responsible for proper circulation of the blood. Pathological function of the blood manifests as stagnation (sometimes translated as "congealed," above) and deficiency. Blood deficiency affects the organs most closely associated with the blood, with general symptoms such as palor, dry skin, and dizziness, as well as symptoms specific to each of the associated organs.

In addition to *qi* and blood, other basic bodily "substances" or energy-substances, on an energy-matter continuum (cf., Kaptchuk 1983: 35), are *shen*, spirit, and *jīn yē*, secretions and fluids.

## **HISTORY OF CHINESE HERBAL MEDICINE**

Chinese herbal medicine has demonic and shamanistic origins, which, in a gradual process that paralleled changing socio-political and ideological trends in China, was transformed into the medicine practiced today, devoid of shamanistic and demonic elements (Bensky and Gamble 1993: 3-5, Unschuld 1985: 67-68). Chinese medicine evolved through a syncretism of Taoist, Buddhist and Confucianist beliefs (Unschuld 1986: 85). By the Later Han dynasty (25-220 A.D.) properties ascribed to herbs, such as taste, hot and cold properties ("temperature"), modes of preparation, and their therapeutic actions in relation to symptoms, were described in materia medica. Through the centuries the Chinese materia medica grew through incorporation of medicinal plants from other cultures and geographic regions, including India, the Middle East and the Americas. During the last fifty years the Communist party encouraged use of folk medicines available locally in China's vast countryside to poor peasants, and these have recently been incorporated into the modern pharmacopeia (Bensky and Gamble 1993: 5). The linking of empirical use of herbs to Chinese medical theory, including the systematic correspondences and eight entities, *qi* and blood, was a product of Neo-Confucianism that sought to synthesize all existing knowledge into a harmonious whole, beginning in the Song (960-1279) and continuing through the Jin (1195-1233) and Yuan (1234-1369) dynasties (Bensky and Gamble 1993: 6). A scholarly detailed study of the changes in materia medica through the centuries in relation to concurrent socio-political changes in China is presented by Unschuld (1986).

organs, which have a broader meaning than their Western counterparts with the same names, is capitalized in the cited text. Some works, e.g., Kaptchuk 1983, Sivin 1987, Farquhar 1994, capitalize all Chinese organ names to make this distinction apparent.)

Study of any individual herbal creates the illusion of an authoritative consensus as to the properties of a given herb and may therefore be misleading. In fact, incongruities and variations exist between herbals as to the properties of the herbs. Regarding herbal properties, Bensky and Gamble (1993: 8) state that "there has never been historical unanimity." While Bensky and Gamble compiled their translation based on "the most commonly-seen opinions (1993: 8)," by not presenting the existing variation, they retain an illusion of consensus characteristic of Chinese herbals. A study of variation in medicinal plant use, paralleling Latin American studies of inter-informant variation for hot-cold assignments to food and medicinal plants (e.g., Harwood 1971, Logan 1973) might more accurately represent the unsystematized and internally inconsistent (Unschuld 1985: 261) nature of Chinese medicine.

## HERBAL PROPERTIES

In modern herbals, properties of herbs include their flavors (Table 4.1), and a sixth, bland taste (*dan*), hot-cold properties (hot, warm, neutral, cold and cool, additionally slightly warm and slightly cool designations are also sometimes used) and an additional astringent (*se*) and aromatic (*xiang*) properties. The flavors or tastes and properties correspond to the organs of the body (Table 4.1) and specific therapeutic functions: salty, bitter, and sour descend in the body, affecting the lower part of the body, while sweet and spicy ascend, to affect the head and upper torso. "Acrid [spicy] substances disperse and move; sweet substances tonify, harmonize and are sometimes also thought to moisten; bitter substances drain and dry; sour substances are astringent and prevent or reverse abnormal leakage of fluids and energy; salty substances purge and soften; and bland substances leech out dampness and promote urination" (Bensky and Gamble 1993: 6).

Additionally, eight methods (*ba fa*) or therapeutic actions by which herbs are classified are diaphoretic (*han*), induce vomit (*tu*), purging (*xia*), harmonizing (*he*), warming (*wen*), clearing (*qing*), tonifying (*bu*) and reducing (*xiao*). Hence we find herbs that clear heat, tonify *qi* and/or blood, warm internal or external cold, or expel internal heat through purging, expel external heat or cold through diaphoresis, reduce stagnation (by promoting circulation of *qi* and blood) and so on. According to Bensky and Gamble (1993: 7), "attribution to an herb of a specific effect upon a specific Organ has since become the predominant method for understanding the actions of herbs." ("Organ," in reference to the Chinese



Figure 4.1: Tongue diagnosis in relation to the organs of the body.

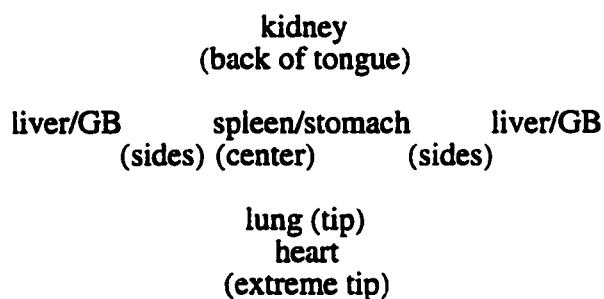


Table 4.1 TCM systematic correspondences.

	Fire	Earth	Metal	Water	Wood
Solid organ	heart	spleen	lung	kidney	liver
Hollow organ	SI	stomach	LI	bladder	GB
Orifice	tongue	mouth	nose	ears	eyes
Tissue	bloodvessel	muscles	skin	bones	tendons
Climate	heat	damp	dry	cold	wind
Emotion	joy	worry <sup>1</sup>	sadness, grief	fear, fright	anger
Direction	south	center	west	north	east
Season	summer	late summer	autumn	winter	spring
Flavor	bitter	sweet	spicy	salty	sour

<sup>1</sup>*Si*, associated with the spleen, is often translated as "overthinking.:" Kaptchuk (1983: 345) prefers "pensiveness." *You*, worry, anxiety, sadness, and *beiyou*, or *bei* alone, grief, are associated with the lung. I translate *si* loosely here as "worry," a form of excessive thinking. "Guilt" might be an alternate loose translation of *si*.

Table 4.2: TCM eight entities.

<i>yin</i>	<i>yang</i>
cold	hot
internal	external
deficient	excess

Table 4.3: Sample interview sheet for Chinese medical diagnosis.

**Chief complaint:** duration, onset, cause

**Observations:**

Face: color

Body: weight, location of pain, body color, shape, moisture, areas, cracks

**Pulse:** locations: L123 R123

speed: rapid, normal, slow

depth: superficial, normal, deep

quality: bowstring, tight, slippery, difficult, relaxed

deficient, excess, normal

**Tongue:** Fur color, thickness, moisture, areas

**Questions:**

Pain: type, location, duration

Sleep: excess, deficient, insomnia

Urine: normal, dark, light, painful, long, short, blood

BM: hard, soft, frequency, mucus, blood

Phlegm: color, thickness, quantity

Upper respiratory: cough, dyspnea, asthma, wheezing

Sweat: night, day, location

Appetite: good, poor, food preferences

Thirst: temperature preference, thirst but no desire to drink

Women: menstruation, onset, duration, length of cycle, color, clots,  
symptoms in relation to period (before, during, after), births,  
pregnancies, cysts, surgeries

**History**

Discomfort of Parts of Body: head, abdomen, back, limbs, etc.

Cold/Hot: preference, fear of

Emotions: fear, grief, anger, joy, anxiety, concerns

Table 4.4: Pulse positions in relation to the organs of the body.

<b>Wrist position</b>	<b>Body region</b>	<b>Left/Blood</b>	<b>Right/<i>Qi</i></b>
distal	chest	heart	lung
central	upper abdomen	liver	spleen
proximal	lower abdomen	kidney <i>yin</i> (s. intestine)	kidney <i>yang</i> (l. intestine)

## **Chapter 5: An Integrative Approach to Non-Western Medicine**

This chapter addresses conceptual issues pertaining to comparative medicine. These include redefinition of personalistic and naturalistic medical traditions, and of symptoms and etiologies in relation to diagnosis and plant use. Chatino medicine (Chapter 3) and the Chatino worldview (Chapter 2) are discussed in this broader framework.

An external (etic) scientific construct has been applied to the study of non-Western medicine, based in part on a classification of etiologies described by Foster (1976). Foster's classification has been misinterpreted and applied in a way that detracts from an holistic integrated presentation of Mesoamerican medicine and medicinal plant use consistent with the native view point (emic). This conceptual problem extends to the understanding of symptoms, etiology and therapeutics, including plant use, in Mesoamerican medicine.

The Mesoamerican worldview in general, and Mesoamerican medicine in particular, are characterized by a number of areas of conceptual overlap that do not lend themselves to dichotomous classification. Conceptual overlap of symptom and etiology is a more general feature of non-Western medicine that affects diagnosis. Based on an understanding of native views of magic and nature, I propose an integrated approach to non-Western medicine that conserves and respects the native view and more accurately represents native medical practice. An integrated approach is also functional for ethnomedical comparative purposes, which was Foster's (1976) primary concern.

## **FOSTER'S PERSONALISTIC AND NATURALISTIC CLASSIFICATION**

Foster (1976) proposed a dichotomous classification of non-Western medical etiologies, that would be useful in an ethnomedical cross-cultural comparative analytical context. He argued "that disease etiology is the key to cross-cultural comparison of non-Western medical systems." He outlined characteristic features of what he termed personalistic and naturalistic medicines, in reference to principal illness etiologies. Personalistic referred to belief in an "active purposeful intervention of an agent, who may be human (a witch or sorcerer), nonhuman (a ghost, an ancestor, an evil spirit), or supernatural (a deity or other very powerful being)." Naturalistic referred to illness thought to be due to "natural forces or conditions," of an impersonal nature. Based on his experience with mestizos in Tzintzuntzán (Michoacán, Mexico), Foster (1976, 1994) considered Mexican humoral medicine of Spanish origin to be naturalistic, despite belief in soul loss due to fright, and anger from interpersonal relations as causes of illness, which were marginal beliefs among the people he studied. He admitted that elements of each would exist in the other, "the two etiologies are rarely if ever mutually exclusive," and that his was an imperfect yet nevertheless useful scheme for classifying a culture's medical beliefs and practices for comparative purposes. According to Foster (1976), Chatino medicine, and the medicine of other Mesoamerican indigenous groups (e.g., Fabrega and Silver 1973), would be considered highly personalistic.

I deliberately avoid the use of the term "medical system," opting instead for the less controversial term, "medicine." The term medical system has been

debated at length in the literature (Press 1980), with, for example, Browner, Ortiz de Montellano and Rubel (1988) arguing for its legitimate use. Unschuld (1985: 3-4, 224), referring to Chinese medicine, and others, argue persuasively against the term. I use "medical system" here only when referencing Foster's (1976) and Berlin and Berlin's (1996) use of the term. As we shall see, Foster and the Berlins use the term quite differently, lending support to arguments against its continued use. The terms personalistic and naturalistic are non-native Cartesian conceptual constructs, hence I restrict their use to this section for the purpose of this discussion.

#### **NON-NATIVE VIEWS OF MESOAMERICAN MEDICINE**

Foster's dichotomous model has led others to depart from an accurate native (emic) representation of Mesoamerican indigenous medicine. Foster's (1976) separation of illness etiologies into personalistic and naturalistic domains, which Maffi (1994) also referred to as etiological and symptomatic (discussed below), is problematic because an external scientific (etic) construct is imposed on indigenous views of the interrelationship between man, nature and the body. My unhappiness with the personalistic-naturalistic dichotomy stems not so much from Foster's argument (1976), but from the way his classification has been interpreted and applied (cf., Maffi 1994, Berlin and Berlin 1996).

My understanding is that Foster (1976) intended his classification of etiologies be applied to the gestalt of any given non-Western medicine, not to individual etiologies within a culture, for the purpose of cross-cultural ethnomedical comparison. Slicing up etiologies into personalistic and naturalistic

domains or systems within a culture results in a skewed representation of native illness experience and treatment. For example, the Berlins (1996: 53) considered "the Maya naturalistic system" as distinct and separate from its personalistic counterpart.

Berlin and Berlin (1996) and Maffi (1994) have made important contributions to the Mesoamerican traditional medical literature, in that they correct the view of Mesoamerican indigenous medicine as being entirely personalistic and not based on symptoms and observations of the body. Prior studies had been dedicated almost solely to Highland Maya belief in sorcery and envy as causes of illness, and described ritual curing in detail (e.g., Fabrega and Silver 1973, Vogt 1969, Berlin and Berlin 1996: 52 provide a list of major works with a ritualistic focus).

#### **MESOAMERICAN CONCEPTUAL OVERLAP OF MAGIC AND NATURE**

Relevant to our discussion are the Chatino beliefs regarding nature and the body described in Chapter 2. One cannot separate nature from the supernatural when describing traditional beliefs from the native perspective. Alcorn (1984: 71) referred to Huastec Mayan "personalization of natural forces" in a similar context. Alcorn called the powers of nature "godpowers" in order to differentiate them from Western objects of worship called "gods" (Alcorn 1984: 72). The magical experience of nature in traditional societies is the central theme of Abram's book "The Spell of the Sensuous" (1996).

If I set out to study Chatino culture from the point of view of the body, symptoms, and medicinal plants and ended up incorporating religion, sorcery and

spirits in my presentation, I have not been alone. As further testimony to the integrated nature of nature and religion, the body, illness, and cosmology in Mesoamerica, is the fact that researchers setting out to study Mesoamerican gods, the soul and religion ended up incorporating the body and medicinal plants into their work (McKeever Furst 1995: 173). The title of McKeever Furst's (1995) book, "The Natural History of the Soul" exemplifies just how important the connection between soul and physicality was in the Mexica (Aztec) world view.

#### **MESOMERICAN CONCEPTUAL OVERLAP OF PERSONALISTIC AND NATURALISTIC ETIOLOGIES**

A characteristic of non-Western medicine (for example, China, Mesoamerica) is a high tolerance for ambiguity and the ability to hold several seemingly contradictory ideas at the same time. For the Chatino, illness can be at once naturalistic and personalistic, since they do not distinguish between the natural and the personal. Apparently the same holds true for the Highland Maya, exemplified by the following paragraph:

Some personalistic conditions show symptoms similar to conditions in the naturalistic system. For example, *buluk' sit* lit. "bulging eye [worm]", vaginal intrusion of a caterpillar with magical powers, is *always* associated with infertility and is *always* personalistic. This same symptom complex of infertility occurs, with a distinct name, in the naturalistic system, for example, *sikil antz* lit. "cold woman", a condition in which a woman is infertile due to the reproductive problems described as a "cold" uterus (Berlin and Berlin 1996: 54, **emphasis mine**, cf., Brett 1994: 79).

Difficulties arise when an attempt is made to separate cultural domains that are inextricably linked. According to Foster (1976), personalistic medicine



could be additionally distinguished by the diagnostic role of the curer. In naturalistic medicine, according to Foster, people self-diagnosed and the curer's role was primarily therapeutic. According to Maffi (1994) and Brett (1994) the Tzeltal Maya sought out curers only for chronic illnesses that did resolve by self-treatment and had been subsequently "reclassified as personalistic in etiology" (Berlin and Berlin 1996: 54).

I found the Chatino sought out healers for illness prevention as much as for chronic and severe illnesses. Minor and major, acute and chronic illnesses all could entail a personalistic aspect. For example, in Zenzontepec, a girl tied garlic, used for sorcerer's *aire*, to her acute sprained wrist. In Tataltepec, toothache was sufficient reason to consult *Santa María (Ipomoea tricolor, Convolvulaceae)*.

Especially in Tataltepec, when small children startled by a dog, or from a zipper catching the skin, mothers immediately sought treatment from a curer. In both these examples, a curer's intervention was sought not for diagnosis but for the curer's therapeutic effect. Such was my experience with Zapotec healers as well. Treatment was often sought for fright immediately after the fright occurred, before illness manifested.

#### **ETIOLOGIES IN CHATINO MEDICINE**

If Foster's (1976) personalistic-naturalistic distinction is to be applied to illness etiologies, I suggest using his classification only as a reference to what is more aptly a continuum of illness etiologies. Some causes of illness lie more towards the personalistic end of the continuum, some are clearly in the grey

middle between the two poles, while others lie at the naturalistic end of the spectrum. For the Chatino, I summarize illness etiologies as follows:

1. ancestors
2. *chaneques* (spirit guardians of places)
3. dreams
4. evil air
5. evil eye
6. sorcery
7. fright
8. strong emotion
9. heat and cold
10. food
11. parasites
12. trauma (including cuts, fractures, sprains)
13. overwork

At first glance, 1-6 might be considered personalistic etiologies, 7-9 an area of overlap, and 10-13 naturalistic, in a linear continuum. (Foster considers 7-13 naturalistic.) This straightforward scheme quickly breaks down. I first bring examples from both ends of the personalistic-naturalistic continuum that question the utility of Foster's dichotomous classification. I then briefly address the disputed etiologies 7-9 to demonstrate the limitations of a dichotomous classification. These etiologies are covered in detail in the chapter on Chatino medicine.

On the personalistic end of the spectrum, dreams of the dead can precipitate sensations of cold in the body. Sorceror's certainly cause physical illness, with distinct symptoms, such as severe, even fatal, diarrhea, severe itching

or excessive menstrual bleeding. Even naturalistic etiologies like parasites and trauma are not exempt from personalistic interpretation. Tiny worms can be injected into victims' noses by witches. Sudden, especially fatal, falls and severe trauma can also be due to witchcraft.

Fright, a strong emotion, merits its own category due to its overriding importance as a cause of illness in Mesoamerican and Latin American medicine. Fright, the main cause of soul loss, is treated ritually, and can cause specific physical symptoms. Back and knee pain are physical manifestations of fright by water, whereas headache, bitter taste in the mouth, and anger are symptoms of fright by fire. Other strong emotions such as anger, sadness and shame have distinct physical symptoms associated with them. For the Chatino, fright is associated with the sun, lightening, fire and water, all of which are deities, as well as with particular entities such as *chaneques*, animals and people.

Physical exposure to extreme temperatures of heat and cold manifests in specific symptoms that may also be treated ritually, usually as fright. Heat and cold are associated with entities or powers such as water, the river, fire and the sun, and emotions such as fright, anger, sadness and shame.

#### **CONCEPTUAL OVERLAP BETWEEN "THERMAL" AND "METAPHORIC" HEAT**

Foster's distinction between "thermal" and "metaphoric" heat and cold is also problematic. Foster (1994) went to great pains to make a clear distinction between thermal and metaphoric heat, where no such distinction was articulated by the people themselves. Nevertheless, he recognized that one could not clearly separate the two domains, "Although the two domains of temperature are

conceptually quite distinct, they do not maintain their integrity as they affect the human body; there is a continual interdigitation of the two systems, crossings over from one to the other." Foster still considered all reference to hot and cold body states, including illness and specific symptoms, as thermal heat, and missed the humoral understanding of metaphoric heat and cold in relation to the body. Brett (1994: 79), commenting on hot and cold etiologies, wrote, "there is a difficult-to-discern line between the actual and the metaphorical."

I refer to heat and cold, both thermal and metaphoric, as part of a continuum or synonymy inherent in the Chatino understanding of nature. For example, in Chatino, **tyikie' kuashi**, heat of the sun, refers to fever as well as to the sun's heat. Hot and cold are root metaphors in the culture that are inclusive and extensive. I have therefore decided to forego use of quotation marks (Weiss n.d.) or capitalization (Foster 1994) in reference to heat and cold, so as to accentuate the metaphoric nature of thermal properties in humoral medicine. Indeed, this approach is consistent with native use of **tyikie'** or *calor, caliente*, for heat and hot, and of **jilya**, *frialdad, frío, fresco*, for cold.

My rejection of the distinction between thermal and metaphoric heat is predicated on my understanding of Chinese medicine. In Chinese medicine, raw foods, thermally cold foods, as well as foods that are metaphorically cold, can all contribute to the accumulation of metaphoric cold in the body. When one admonishes a patient to avoid raw and cold food, cold refers to both cold in temperature and cold in quality. As Cosminsky (1975) found in Guatemala, Molony (1975) and Mathews (1983) in Oaxaca, and Foster in Michoacán (1994:27) cooking can change the metaphoric, not only the thermal, property of a

substance. Hence, the (metaphorically) cold properties of tofu are mitigated by cooking with scallions, which adds heat, both thermal and metaphoric.

Indeed, as Foster himself asserts, "If in the classical literature, and in a number of ethnographic accounts, the distinction between metaphoric [sic] quality and thermal temperature is not clear, how can we be sure in Tzintzuntan when it is one and when the other?" Foster was clearly troubled by the idea of metaphoric temperatures, and for whatever reason, felt compelled to distinguish the two.

#### **SYMPTOMS AND ETIOLOGY: THE BASIS FOR DIAGNOSIS**

In the medical anthropological literature, etiology has been equated with diagnosis, separate from physical manifestations of illness (Foster 1976, Lewis 1975 in Maffi 1994: 6, Maffi 1994). These terms merit clarification. Whereas etiology refers only to the cause of a disease, *diagnosis* refers to the *identification of a disease (or illness) by signs, symptoms and/or cause*. Diagnosis is crucial for determining treatment protocol. One cannot fully comprehend or ascertain the role of a medicinal plant without a clear understanding of the diagnostic process. Etiology and symptoms (symptoms and signs) are both critical aspects of diagnosis. I therefore argue that to represent a culture's medicine accurately, etiology and symptoms cannot be arbitrarily separated, especially because diagnosis often relies on both these aspects.

Lewis (1975 in Maffi 1994: 6), working with the Sepik, considered symptoms irrelevant to diagnosis, which was only etiology based. Maffi (1994), in her linguistic analysis of Tzeltal illness terminology, adopted his view.

Contrast this with Frake's (1961) view of diagnosis, "Nevertheless, very few diagnostic decisions are made by the Subanon without some apparent appeal to stimulus properties of illness; and in the majority of diagnoses these are the overriding consideration" (cf. Fabrega 1974: 13-15). Perhaps one reason for compartmentalizing symptoms from etiology and diagnosis, is the difficulty anthropologists (Lewis 1975 in Maffi 1994: 6, Frake 1961, Fabrega 1974: 43) have encountered in eliciting descriptions of symptoms during illness. I agree with Maffi (1994: 9) that research limited to the magical religious aspects of medicine misses the importance of symptoms to diagnosis. By focusing solely on symptoms to the exclusion of etiologies, Maffi erred the other way, also obscuring the diagnostic process in Tzeltal medicine. One cannot readily separate symptoms from etiologies when discussing traditional medicine.

Certain actions or experiences may be diagnostic, as well as etiological. For example, back pain after strenuous work might be attributed to *cuerda* (overwork). Onset of back and knee pain after slipping in a flooded stream could be considered fright by water. I might point out that a purely etiology-based diagnosis is not lesser than a symptom-oriented approach to diagnosis. In fact, Western medicine prides itself on taking an etiological approach to diagnosis, and great pains are taken to distinguish between pathogens in cases where manifestation of symptoms may be similar or identical. Etiology then directs treatment. The comparison of traditional medicine with Western medicine may seem absurd to those who dismiss indigenous perception and reality as humbug, yet the two medical traditions are in fact based on the same mode of reasoning.

## CONCEPTUAL OVERLAP OF SYMPTOM AND ETIOLOGY

Maffi (1994), and Berlin and Berlin (1996) found that discourse on illness among the Highland Maya is indeed symptom based. According to Maffi, clusters of symptoms delineate conceptual categories of disease to which specific treatments may be directed. However, curers who deal with personalistic aspects of illness do not rely on symptoms in order to diagnose, according to Maffi. By first sorting illnesses into personalistic and naturalistic domains, thereby removing the personalistic realm from her analysis, Maffi concluded that personalistic illness is only etiological and is divorced of any relationship to symptoms and observations of pathology. Certainly, the Chatino attribute specific physical symptoms to specific etiologies, etiologies which one might imprecisely refer to as both personalistic and naturalistic. Maffi's (1994) and Berlin and Berlin's (1996) approach resulted in a dismissal of the metaphysical relationship to the physical.

Maffi's bewilderment at the inclusion of madness and headache with "illnesses of the airways" stemmed from her narrow definition of "airways" as respiratory tract. She reasoned that fever often accompanying respiratory distress, as in influenza, also causes headaches. While headache is often associated with high fever, I suspect that headache and madness were included in this category by Tzeltal speakers because *aire, ik* in Tzeltal, affects the head and causes madness. Description of the causes of illness in this category supports my suspicion, "It is if we get very wet in the rain, and if there is a lot of cold, and if we breathe a lot of dust, and if there is something with a bad smell whose smell we breathe, for

example putrid garbage, putrid excrement, putrid dead animals (Maffi 1994: 334)." Seven of ten illnesses in this category had similar descriptions of putrid smell. Cold air and putrid air are aspects of Tzeltal *aire* that were also found in Mexica (Aztec) medicine (McKeever Furst 49-52 for cold, 167-172 for putrid).

Brett (1994: 79) gave several examples of overlap between hot-cold, symptom and personalistic etiology. For example, inflammation is a hot condition treated with cold herbs, but is also often associated with witchcraft, hence also treated with prayer. To his credit, Brett (1994) noted and understood the inextricable link between symptoms, etiology and therapeutic practice in Tzeltal medicine. In fact, etiology and symptom are often interchangeable. For example, in Chatino medicine, *muina*, anger, is both cause and symptom, as well as a diagnostic category (syndrome), with a cluster of associated symptoms. (See below for the analogous situation in Chinese medicine.)

Maffi (1994: 172) makes a similar point regarding the synonymy of symptom and etiology for the Tzeltal medical concepts of cold and *aire*.

In the case of cold and *aire*-caused problems, *sik* and *ik'* respectively, become integral symptoms of what is wrong, that is, become identified with particular sensations that can be perceived in the belly (mostly pain that moves around and gases). In both instances, then, one might legitimately claim that the names for these health problems are as much symptomatological as they are etiological (or rather "pathogenic" in Frake's terminology), so that the overall symptomatological nature of the category is confirmed.

Unfortunately, she misses the full import of her observation. Symptom and etiology, expressed by the same terminology, can hardly be conceptually



discrete. From the Tzeltal perspective, the two conceptual domains are united, at least in the case of *aire*.

The Berlins (1996:70) consider Highland Mayan medicine to be a "medical system based on symptomatology," thereby minimizing the role of etiology in diagnosis. They express the conceptual overlap of symptoms and etiologies or diagnoses slightly differently from the way that I do. "This overlap occurs because there is no marked distinction between a Mayan term that is used to indicate a *symptom* and the same term to indicate an *illness condition*." Ambiguity of terminology is one reason for the overlap. The other reason is inherent in the nature of all medicine, whereby symptoms cluster to syndromes in order to derive a diagnosis.

#### **SYMPTOM CLUSTERS OR SYNDROMES: KEY TO DIAGNOSIS**

One of the reasons for the complexity of illness taxonomy not mentioned in the anthropological literature is the clustering of symptoms into syndromes for differential diagnoses. This aspect of medical diagnosis is apparent in my presentation of the conceptual organization and clustering of symptoms in Chinese medicine. At times, a single key symptom points to a diagnosis. More often, a single symptom, such as nausea, cough, or diarrhea, may be present in conjunction with other symptoms. Only the overall picture or symptom cluster, can lead to a definitive diagnosis. For example, in Chatino medicine, treatment is not administered solely on the basis of the presence of diarrhea. Additional information, such as the color of the stool, red if tinged with blood, white if accompanied by abundant mucus, allows for differentiation into hot and cold

types respectively. Differential diagnosis then allows for a choice of appropriate herbal treatment with cooling herbs, such as *Hibiscus sabdariffa* for "hot diarrhea" and warming herbs such as *Matricaria recutita* for "cold diarrhea."

Another compounding factor in illness taxonomy recognized by both Maffi (1994) and Frake (1961) is prodromal symptoms, that can pertain to different categories of illness as a disease progresses. The concern with prodromes is subsumed in my discussion of the need for symptom clusters in order to derive a diagnosis.

#### **IMPORTANCE OF SYMPTOMS IN RELATION TO PLANT USE**

By extension of the Chatino magical view of nature, illness is both supernatural and natural, personalistic and naturalistic, manifesting as discrete physical symptoms, that can be mitigated by plant remedies and by ritual. My data support the integrative approach to Mesoamerican medicine I propose here in two important ways. As mentioned above, the Chatino associate specific physical symptoms with personalistic causes of illness such as witchcraft, *aire*, dreams and *espanto* (fright and soul loss). For example, itching in the throat or nose believed to be caused by worms, and uterine bleeding are symptoms directly associated with witchcraft. Second, medicinal plant use corresponds to specific personalistic causes of illness. Plants can dispel *aire*, *chaneques*, fright and witchcraft, just as they relieve diarrhea, edema, infection, and fever. Trotter (1991) made similar observations among Mexican-Americans regarding the lack of dichotomy in medical beliefs and plant use.

According to Brett (1994: 71), the Tzeltal Maya Indians only used medicinal plants to treat "empirical physical disorders." In contrast, the Chatino use many medicinal plants for illnesses caused by witches, dreams, *espanto*, *chaneques* and *aires*, not only in ritual fashion, but also in baths and internally. In fact, people often resort to multiple treatments, using herbal cures as well as a healer's intervention, when witchcraft is implicated.

Hot and cold are the two most salient features associated with Tzeltal and Tzotzil Mayan plant use, as indicated by the Berlins' finding that 49% of plants were classified as hot and 32% as cold (1996: 61). (The actual frequencies are probably slightly higher, as hot and cold, which are symptom based and mutually exclusive, were lumped with organoleptic categories that are not mutually exclusive of hot and cold qualities.) Plants are medicinal when they resolve symptoms, not when they are bitter. Many plants are bitter, but not all bitter plants are medicinal (Brett 1994: 186-187).

Symptoms are a link between both plants and illness concepts. Plants act on and intersect with bodily perceptions, by modifying and abating symptoms. Hence, we can understand designations assigned to plants only by understanding the native medical classification of illnesses and symptoms.

"It is the ethnomedical concept of the illness as 'hot' or 'cold' which determines whether the medicine used to treat it, which must be the humoral opposite, will be hot or cold rather than anything inherent and verifiable in the plant (Messer 1981, Tedlock 1987)" (Brett 1994: 202). This point has been repeatedly demonstrated in Mexico and Central America (Foster 1979: 181; Logan 1973: 390-1).

Alcorn (1984: 297-298), regarding the symptom and illness based classification of medicinal plants, wrote, "Hence the 'use' is primary; the systematization of the pharmacopoeial items is a secondary elaboration based on existing usage. Again, the plant itself is tied to the particular condition it treats."

My goal was therefore two-fold. First, to verify in the field (Chapter 3) and through cross-cultural comparison (Chapter 6) what were the medical considerations, namely symptoms and etiologies, linked to classification of plants. And secondly, to search for phytochemical or pharmacological correspondences between the plants and the native medical concepts (Chapter 7).

Brett (1994: 81-82) showed that hot and cold assignments of plant quality are related to the symptoms treated. Certain conditions, such as fever, diarrhea, one tongue condition, sometimes fell in the "wrong" column, i.e., hot or cold were attributed to plants used for those conditions contrary to Brett's expectations. Brett attributed these discrepancies to inter-informant variation. I suspect this variation was due to the lack of inclusion of sufficient diagnostic information, symptomatic and etiological, from the analysis. For example, Brett expected all fevers to be hot, hence all plants used for fever should be classified as cold. For the Chatino, fever may be of hot or cold origin. Perhaps the Tzeltal also distinguish hot and cold type fevers, which would explain the discrepancy in Brett's data. Brett considered all diarrhea to be cold, hence plants used for diarrhea should be hot. Diarrhea, for the Tzeltal Maya, as for the Chatino, is further distinguished by color, as in the absence or presence of blood. *Tzon kok*, coated tongue, has two forms, a white and a yellow form (1994: 309), which may further distinguish hot and cold types. Brett alluded to plant use according to

syndrome when he said the same plant may be used for symptoms that are "ethnomedically linked." Examples he gave were fever and cough, bloody diarrhea and aphthous ulcers or herpes, fever and coated tongue (Brett 1994: 184-185).

Foster (1988, 1994: 129-146) considered what he termed the "prescriptive fallacy" of hot and cold and presented a wonderful case for the validating cultural role of hot and cold. Hot and cold can be both prescriptive and validating, just as the many other examples of validating aspects of culture Foster cites, such as genealogy and judicial evidence, are both real and fictitious. Certainly, for practitioners of Chinese medicine, hot and cold are prescriptive. Other ethnomedical concepts already mentioned, such as wind, blood, and energy, are also prescriptive. No doubt hot and cold, as well as wind, blood and other concepts, are also mnemonic for associating therapeutics, such as medicinal plants, with symptoms (Alcorn 1984: 297 regarding hot-cold).

#### **INTEGRATIVE PERSPECTIVES IN CHINESE MEDICINE**

In Chinese medicine, emotions and "substances" such as *qi* and *shen* (spirit) pertain to the function of specific organs, and specific symptoms associated with these organs (Chapter 4, Ots 1990). In Mesoamerica, Foster (1994) considered the emotions, heat and cold, to be naturalistic components of medicine (see "Etiologies in Chatino Medicine," above). Maffi (1994) considered emotions to be personalistic. We can resolve ambiguities in classification of symptoms and etiologies through an integrative approach, even when demonic aspects are absent.

In Chinese medicine, the root cause of an illness is termed *ben* (lit. root), and the signs and symptoms, or manifestations, are referred to as *biao*. *Biao ben tong zhi*, "treat symptoms and cause together," is a basic tenet of Chinese medicine. Herbs are prescribed in a formula both to alleviate symptomatic distress as well as treat the underlying cause of illness. So, for example, for a lung disorder with cough and copious white phlegm, herbs are prescribed to cause the *qi* to descend thereby alleviating the cough, a symptom, and to support the spleen, the "mother" of the lung according to the five phases, which is the root. (Mucus is produced by the spleen and stored in the lung.) Interestingly, the medical dictionary by Ou et al. (1980: 145) translates *biao* and *ben* as "secondary and primary aspects of a disease," rather than symptom and cause. Symptoms and cause are aspects of the same illness (or diagnostic category), and are treated jointly (*tong zhi*).

In Chinese medicine the interchangeable nature of etiology and symptom is pronounced. Anger is both a cause and symptom of "liver heat." Wind is both cause and symptom of joint pain, manifesting in the body as moving, unfixed pain. The Chinese are not concerned with whether the anger in liver heat preceded the other symptoms of heat, such as yellow tongue fur, constipation, nausea and a wiry pulse. Treatment is directed towards clearing the liver heat, in which case the anger subsides, whether it was greasy food that led to the anger, or the emotional state that led to the physical distress. Similarly, for wind, a practitioner does not need to determine that exposure to wind preceded the manifestation of wind in the body, namely joint pain. Treatment is directed towards expelling wind, which in our example *means* joint pain.

Chinese folk medicine (discussed in Chapter 6) retains some demonic elements, such as preoccupation with ghosts and soul loss due to fright. Ahern (1978: 25-28), who studied Chinese folk medicine in a Taiwanese village, found that ascertaining the cause of illness was the single most salient factor considered by people seeking care. Choice of treatment, by a shaman or by a Chinese or Western medical practitioner, depends on ascertaining cause (Ahern 1978: 26). Gould-Martin (1978: 50) gives three Chinese folk classifications of illness: 1. illnesses that "just happen," are not serious and are treated with herbs (cf., Ahern 1978: 6, 30); 2. illnesses that arise from within the body, are treated with herbs by a Chinese medical practitioner, or by a Western physician, and may have traditional explanations assigned to them, such as hot, cold and poison (primarily a Chinese folk illness category); 3. illnesses from supernatural causes (also Ahern 1978: 26). Ahern (1978: 26) writes, "With a few exceptions the symptoms characteristic of [diseases arising within the body] and [supernaturally caused illnesses] can be precisely the same." I would be curious to know what those exceptions are and how people distinguish cause prior to consulting a practitioner. For Chinese folk medicine I would expect a situation analogous to that Spiro (1978) found in Burma, where differential diagnosis is at least partially symptom-based.

Spiro (1978) focused on supernaturally caused illness in Burmese medicine out of practical considerations. He listed specific symptoms associated with supernatural illness, with some differences between children and adults, which bear repeating here in order to emphasize the physical nature of supernatural illness. In children supernatural illness manifested as "prolonged

crying, abdominal pains, diarrhea, dysentery, fever, and body sores. For adults the list includes sore eyes, choking feelings, appetite loss, abdominal pains, diarrhea, dysentery, fright, and mental illness (including wandering about in a daze, falling unconscious, violent attacks, uncontrolled obscenity, fits and trance states)" (Spiro 1978: 220-221). "Just as Westerners can usually identify the symptoms of some, at least, of the well-known diseases, so the Burmese can differentiate the symptoms of many supernaturally caused diseases" (Spiro 1978: 223). Specialists are sought "when the symptoms do not permit of a ready diagnosis" (Ibid).

An integrative approach that allows comparisons between the sacred and secular can be applied to an intracultural analysis of secular Chinese medicine and Chinese folk medicine, which deals with the sacred. I was originally drawn to the study of *fengshui* because I was curious to learn additional perspectives on Chinese medical concepts such as the five phases and *qi*. Prof. Lin Yun dealt with the emotional, psychic and spiritual aspects of the five phases, which included observational methods of diagnosis for imbalance. The emotional component was an area of overlap between the two "medicines." More such observations are possible, even likely, especially if we consider that the two arose and co-exist within the same culture and that Chinese medicine has demonic origins.

We can accommodate relictual demonic concepts with an integrative approach. For example, rarely mentioned in the present-day clinical practice of Chinese medicine are the existence of two souls, *po* and *hun*, that were more important historically in China. *Po* is a "corporeal soul" that enters the body at



birth with the breath and dies with the body. *Hun* is an "ethereal soul [that] enters the body only much later after birth," (Unschuld 1985: 36) can leave the body during sleep and persists after death. *Po* is associated with the Lung and *hun* with the Liver (Kaptchuk 1983: 73, Matsumoto and Birch 1988: 20).

Prof Lin Yun describes a *ling* particle (*ling zi*, lit. spirit or soul seed) or that leaves the body after death and can reincarnate (Rossbach 1987: 164). "*Ling* are tiny airborne particles (or molecular charges) that circulate in the universe and enter the womb at conception. When a baby is born its *ling* becomes *ch'i* [Pinyin *qi*]. When we die, our *ch'i* joins the limitless pool of *ling*" (Rossbach 1987: 11). The ritual cure for female infertility entails leaving a little dust under the bed when cleaning, where *ling* particles can abide. *Hun* and *ling zi* appear to be related concepts, that correspond to Chatino concepts of the soul (Chapter 2). In current Chinese usage, the two words are combined in the word for soul, *linghun*. Kübler-Ross (1991), reknowned for her work on death and dying, proposes that humans share universal characteristics of the soul, as well as of the body, that we may be missing by applying a Cartesian analytical approach to comparative medicine.

#### **MEANING IN MEDICINE: DIAGNOSIS AND TREATMENT**

Regarding diagnosis Foster (1976) wrote, "In contrast [to a personalistic diagnosis of who caused the illness], in naturalistic systems diagnosis is of very minor importance, as far as the curer is concerned." Practitioners of Ayurveda, Unani, and Chinese medicine, as well as practitioners of biomedicine, who pride themselves on years of training in honing their diagnostic skills, would strongly

disagree with Foster's statement. Certainly the Chatino, with their strong belief in personalistic causes of illness, self-diagnose, attributing causation of specific illness episodes to past experiences. Foster considered the practitioner's role to be mainly diagnostic in personalistic medical systems, and more therapeutic in naturalistic systems. All medicine is both diagnostic and therapeutic, whether diagnosis is symptom and/or etiology based, self or curer diagnosed, or therapy is addressed to symptom and/or cause.

Maffi (1994) pointed out the lack of attention to symptoms in ethnomedical studies undertaken by anthropologists. Focus of anthropological studies has traditionally been on the psychological and social aspects of illness. An exception is the Berlins' (1996) thorough study of gastrointestinal diseases among the Highland Maya of Chiapas, in which they present a detailed description of symptoms along with plants used for the described conditions. (They also gathered incredibly detailed data on intracultural diversity of plant use and illness terms.) Some anthropologists recognized the need for more work on bodily dysfunction that would have cross-cultural relevance and make anthropological research meaningful to practitioners (Rubel and Haas 1990: 119, Fabrega 1977: 379-380 in Maffi 1994: 5, Good and Good 1980). Based on my experience as a practitioner, I presumed that symptoms played an important role in diagnosis and treatment.

I sought to fill a gap I perceived in the customary anthropological and botanical approaches to the study of non-Western medicine and medicinal plant use. Botanists have been inclined to compile thorough lists of plants used medicinally, with minimal attention to symptoms and diagnosis by which specific

remedies are selected. Only by bringing symptoms, diagnosis and treatment together can we get a clinically useful and complete medical picture.

My understanding of the inherent interconnectedness of symptoms, diagnosis and treatment, stemming from my experience as a practitioner, enabled me to gain an integrative view of Chatino medicine. I hope this model can serve as a guide to future researchers in ethnomedicine. A diagnosis and treatment oriented analysis of herbal medicine can be meaningful to practitioners (Good and Good 1980) and serve as a basis for a more comprehensive comparative approach to ethnomedicine.

#### **APPLICATION OF AN INTEGRATIVE APPROACH TO COMPARATIVE MEDICINE**

An integrative approach to non-Western medicine, that does not *a priori* separate illness concepts into personalistic and naturalistic categories, is also especially useful for comparative purposes. Regardless of the personalistic-naturalistic overall orientation of any given medical tradition, many non-Western medical concepts, such as hot and cold, wind, blood, cold womb, certain organ functions, that are associated with characteristic symptoms and medicinal plants are still comparable across cultures. My approach is therefore both functional, allowing for identification of similarities and differences between illness concepts across cultures, and inclusive, of medical traditions regardless of their personalistic-naturalistic orientation.

## **Chapter 6: Cross-cultural Comparisons**

In this chapter I explore diagnostic and conceptual analogies and divergences between Chatino and Chinese, Zapotec, and Chinantec and Chinese medicine, respectively. As mentioned in Chapter 1, illness categories in Mexico and China are often analogous or contain certain fundamental diagnostic features in common. Medicinal plants and/or rituals are often prescribed based on these diagnostic features. In the following cross-cultural discussion, I focus on similarities and differences in the symptoms, signs and etiologies essential to diagnosis among the Chatino and the Chinese. I include a brief presentation of my work with two Valley Zapotec healers to contrast and compare their use of plants with the Chatino and Chinese. A comparison of Chinantec and Chinese concepts of blood with regard to women's health relies primarily on Browner's (1985a, b) work, and on my brief two week visit to the same Chinantec community. A statistical analysis of the Chinantec plants and a list of corresponding Chinese herbs for blood is included in Chapter 7. In this section, I also draw on literary sources for some other Mexican cultural groups (e.g., Purépecha, Tzeltal and Tzoltzil Maya).

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### **COMPARABILITY OF OAXACAN MEDICINE WITH CHINESE MEDICINE**

Among the Chatino, Zapotec and Chinantec, ritual and magic are an integral part of treatment (see Chapter 3: Chatino Medicine). This use of ritual

differs greatly from that of the Chinese, among whom magic is often designated as *fengshui* ("wind [and] water," also known as Chinese geomancy), and relegated to the realm of gods, temples, and the underworld (e.g., Kleinman 1980, Ahern 1978), apart from Chinese medicine (*zhong yi*). Attack by spirits, ghosts, and soul loss are all part of Chinese folk medicine (Ahern 1978: 26-28). The Chinese do not include the supernatural in their discussion of medicine, per se. However, geomancy (e.g., San Francisco and Hong Kong, pers. observ.), temple mediums (*dang ji*), and other healers (e.g., Ahern 1978: 27-28, Gould-Martin 1978) are still sought for treatment of misfortune and illness in some Chinese communities today. Rituals are performed to appease the ancestors, exorcise evil spirits, and adjust the earth *qi* (pers. observ., Rossbach 1987, Rossbach and Lin 1997). [Although historically sorcery played an important role in Chinese medical theory (Unschuld 1985: 128), sorcery is virtually absent from Chinese present day thinking. In Taiwan, bewitchment was cited only in extreme cases of mental derangement (Anderson and Anderson 1978: 79-80).] Despite this major difference, I contend that Chinese medicine can still be compared to practices in Mexico. The integrated approach to non-Western medicine outlined in the preceding section is applicable to a comparative medical analysis. For example, while the deific aspects of heat or cold, or the malevolent intentional aspects of wind are no longer part of Chinese medicine, manifestations of heat, cold, and wind in the body still bear certain parallels across cultures.

We can perhaps speak of two Chinese medicines, the "official" formalized secular Chinese medicine (traditional Chinese medicine or TCM, discussed in Chapter 4) taught in schools and published in text books, and Chinese folk or

sacred medicine (Ahern 1978). Some aspects of Chinese folk medicine and ritual practice are closer to Mexican indigenous practices than to "official" Chinese medicine. Fright is still a vital part of Chinese and Southeast Asian folk culture, and so I draw on the Southeast Asian anthropological literature for a brief discussion of fright across cultures.

Finally, ("official") Chinese medicine, like traditional medicine in Oaxaca, is not systematized and is internally inconsistent. (Unschuld 1985: 250-251) has stated that Chinese medicine is a heterogeneous collection of coexisting explanatory paradigms. My understanding of Chinese medicine gained from clinical experience supports Unschuld's assertion.

## **CHATINO AND CHINESE MEDICINE**

### **Causes of Illness**

Lack of separation of mind and body and the implication of emotions as causes of illness are common ideas to both Chinese and Chatino medicine. The Chinese list causes of illness as external, such as wind, damp, heat, dryness, and cold (Kaptchuk 1983: 118-119), or internal, such as excessive anger, fear, sadness, joy, fear and fright, or the excessive intake of cold and raw foods (Hebei Yi Xueyuan 1980, Vol. 1: 42, 49-50). Additional causes of illness are trauma, parasites, overwork, and lack of sleep. [Similar causes of illness have been noted elsewhere in Mexico (cf., Currier 1966, Ingham 1970, Messer 1991).] In Chapter 5, I listed 13 causes of illness for the Chatino. Of these, ancestors, evil spirits (*chaneques*), and sorcery have analogues in China's early history. Evil air, a major Chatino cause of illness, is contrasted below with Chinese *qi* and wind,

which have demonic origins (Unschuld 1985: 67-73). Heat and cold, two major causes of illness in Chatino medicine, in addition to being causes of illness for the Chinese, in their broader meaning are reminiscent of the fundamental Chinese duality of *yang* and *yin*, associated with sunlight and shade (or sun and moon) respectively.

### **Body Structure and Function**

A certain vagueness applies to the organs in both Chatino and Chinese medicine. The most obvious Chatino example is the term *tyikiee* which refers to both heart *and* stomach or epigastrium. Chinese medicine focuses on organ function, not structure, i.e., on physiology rather than on a precisely defined anatomy. In both Chatino and Chinese medicine, the liver is on the right side of the body, and the spleen on the left. The spleen is easily injured by cold, and the liver tends toward heat disorders.

Relationships between organs are a fundamental and important aspect of Chinese medicine and provide a means for interpreting pathology and directing treatment. (For example, spleen is the mother of lung according to the five phases. If the spleen-lung relationship is deemed the relevant one to a given case, treatment of the lung disorder will include herbs to support spleen function.) Where Chinese medicine also focuses on the relationships between the various organs, or "functional entities" as Unschuld aptly refers to the organs (1985: 79), Chatino medicine refers only to individual, isolated organ function. In other words, no between-organ relationships are described, such as spleen-liver, or spleen-heart.

Both the Chatino and the Chinese articulate an intimate connection between vital energy (*shilee*, *fuera* and Chinese *qi*) and blood. (Chatino: "blood is the strength of the body," and Chinese: "*qi* is the motivator of the blood," "blood is the mother of *qi*." Refer to Chapters 3 and 4 respectively.) In Chatino medicine, back and knee pain (*cuenda*) are associated with a loss of *fuera*, overwork and cold, analogous to Chinese kidney *qi* or *yang* deficiency. (Chapter 3, "*Fuera* and *cuenda*" has some comparative discussion.)

### **The Pulse**

Chatino and Chinese healers rely on the pulse as a central means of diagnosing. For both, a rapid pulse indicates heat and a slow pulse indicates cold. Healers from both cultures take the pulse for each hand. In Chinese medicine, the pulse is taken with three fingers, and in Chatino medicine, with the thumbs. The Chinese take the pulse on only the radial aspect of the wrist, while the Chatino use both thumbs to take the pulse on both radial and ulnar aspects of each hand.

While the Chinese and Chatino both have "objective" descriptions of the pulse, one could argue that pulse diagnosis also has an intuitive aspect. No Chatino healer could describe the difference in the pulse between "fright by fire" and "fright by the midday sun," which presumably both have rapid pulses. One possibility is that the different pulses must be felt to be understood by another, and the subtle difference cannot be verbally communicated. Another possibility is that the healer receives an intuitive flash of insight during the pulse diagnosis that indicates whether the fright is of one kind or another. Chatino healers indicated



that differences in the pulse could be perceived, which would be akin to Chinese pulse, taught by following a teacher and feeling the same pulse.

### **Hot and Cold**

The most notable similarity between Chatino and Chinese medicine is the classification of symptoms into the two broad basic categories of hot and cold (Tables 1 and 2). However, the Chinese expanded the original two categories, associating *yin* and *yang*, heat and cold, internal and external, deficiency and excess (the eight entities), with internal organ pathology, resulting in a complex illness classification.

As mentioned earlier (Chapter 3), Chatino "fright by fire" can be caused by witnessing a conflagration, such as one's house burning down, or by witnessing a domestic quarrel or violence in the kitchen, near the *comal*. Symptoms are heat related, such as anger, *latido* (pulsating abdominal pain), headache and rapid pulse. Although Chatino and Chinese causes for heat differ, symptoms of "fright by fire" are analogous to Chinese "excess heat" (i.e., liver heat) symptoms.

In both Chatino and Chinese medicine, a rapid pulse indicates heat. In Chinese medicine, two major types of heat are distinguished, "excess heat (*shi re*) and "deficiency heat (*xu re*)." (Please note that "deficiency heat" refers to a constellation of characteristic heat related symptoms, *not* to a heat deficiency or a lack of heat.) Excess heat is most commonly associated with liver fire, while "deficiency heat" is commonly due to kidney *yin* deficiency. (*Yin* deficiency can be loosely characterized as dryness stemming from lack of bodily fluids.) A rapid

strong (excess) pulse indicates excess heat, while a rapid weak pulse indicates "deficiency heat." A Chatino healer diagnosed me as having "insufficient blood," because my ulnar pulse was not easily palpable, and "fright by the midday sun." Chatino "insufficient blood" with "fright by the midday sun" may well be analogous to Chinese "deficiency heat." The Chatino say "when the blood is weak, one dreams ugly." Frequent dreaming, restless sleep and insomnia are symptoms of Chinese "deficiency heat."

The Chatino sometimes differentiate heat and cold differently from the Chinese. When examining my infected bedbug bites, a lively discussion ensued. Although my wounds were red and swollen, my Chatino hosts concluded that since I had bathed in the cold river on the way to the village, the cold had penetrated and become entrapped within, *se pasmó*. (The same term is applied to common colds that develop into asthma or chronic bronchitis. The cold is believed to have become trapped inside the chest.) White is the color of cold, so copious white pus may have supported their diagnosis of *pasma*. Heat was indicated for cold type wounds (See Chapter 3). For the Chinese, such purulent wounds would only be considered hot with "heat toxin (*re du*)."

Both cultures designate plants of opposing natures to treat hot or cold conditions (Table 6.4), although they differ markedly in their methods of preparation and use of plants (Table 6.3).

In both Chatino and Chinese medicine, when illness is advanced and complex, one can have both heat and cold (*yin* and *yang* deficiency) symptoms at the same time.

## Wind

Symptoms of wind (Chatino: *kuë'ë*, *aire*; Chinese: *feng*) in Chatino and Chinese medicine are quite similar. Wind is associated with the head, headache, pain that moves about the body, seizures, convulsions, dizziness and insanity. The Chinese distinguish between internal and external wind. The Chatino do not make an explicit distinction between these two types of wind, yet, like in the example of "deficiency heat" above, the Chatino have ways of expressing similar distinctions. For the Chatino, wind from anger (*aire de muina*) can be considered analogous to Chinese internal liver wind, which both manifest with headache. Chatino cold wind (*aire frío*) parallels Chinese external wind cold (*feng han*), which both cause (or describe) the common cold. (The Chinese distinguish two kinds of external wind, hot wind and cold wind.) The character *feng*, for craziness or mental illness, consists of the radical for illness combined with the wind radical, which arguably could refer only to the sound, but in this case likely denotes meaning as well. (Most Chinese characters, around 70-80%, are formed by a sound radical combined with a meaning radical.)

Chinese symptoms of wind are:

headache, body pain, muscular and joint pain that shifts from left to right, upper to lower parts of the body; fever with dislike of wind (wind heat), stuffy or dripping nose, cough and throat pain; mouth and eyes awry (as in Bell's Palsy), facial spasm; itching skin, red eruptions; arms and legs twitch, lockjaw, opisthotonus; dizziness or vertigo and blurred vision, hand and foot tremors, numbness of four limbs; head dizzy and distended, deafness, sighing, limbs and body tremors, irritable, easily angered, with varying tongue and pulse depending on the accompanying hot, cold, damp

or dry condition. Wind is the leader of one hundred diseases (Cheng et al. 1984: 196).

The Chatino specifically mention infantile convulsion as due to *aire*. In Chinese medicine, infantile convulsion is called *jing feng*, literally "fright wind," and has four possible causes: fright, wind, phlegm (a form of dampness), and heat (Ou et al. 1980: 201). [For wind related spasms, tremors and convulsions, Kaptchuk (1983: 295) lists five possible causes: external wind, heat, deficient blood, deficient *yin*, and congealed blood.] In Chatino medicine, an intimate connection exists between fright (*espanto*) and *aire* (wind), where fright makes one susceptible to soul capture by a demonic wind spirit (see "*chaneque* and *aire*," "*chaneque* and *espanto*," "*aire* as *espanto*," in Chapter 3). "When one falls," a sign of fright in Chatino medicine, and falling due to epilepsy, considered *aire*, are another point of overlap between Chatino wind and fright. Historically, Chinese wind had a demonic aspect that is reminiscent of Chatino wind. Chinese wind was once a spirit-demon (Unschuld 1985: 25, 71), much as *mal aire* (evil air) in the Chatino sun and moon origin legend is personified (Chapter 2).

Facial paralysis, although not specifically mentioned by the Chatino as a symptom of *aire*, was considered *aire* by the Zapotec in one case I encountered. Pre-Columbian stone sculpture dramatically depicts facial paralysis from attack by *aire* (Fig. 6.1). Justino attributed his own paraplegia to *aire*, *maldad*, attack by a *nagual* (the animal companion of a witch, Chapter 2), and cold. Hemiplegia and facial paralysis are symptoms of wind in Chinese medicine.

Panic attacks and palpitations, sometimes associated with *aire* by the Chatino, are related to the Heart, not to wind, in Chinese medicine (see "Illustrative Case Histories," below).

For the Chatino, when a condition is severe or chronic, *aire* may be the explanation. In the face of chronic and severe illness, *aire* is an expression of the inability to find a solution to illness, of the fated nature of the illness, the overwhelming power of, and helplessness before the wind. The Chinese do not similarly attribute failed cure with wind. Since *Ming Men*, the Life Gate, and *Yuan Qi*, source qi, are housed in the kidney and are depleted as a result of long term illness, in Chinese medicine the kidney is always implicated when conditions become chronic.

### **Emotions**

Use of medicinal plants is a means for acknowledging or expressing strong feelings. When I expressed anger in the home of my Chatino hosts, my host brought me root of *yerba de muina*. I was reminded of my Chinese mother in Nanjing, who was furious in the face of her husband's passive-aggressive stonewalling. She was diagnosed with liver heat by a village folk healer, who prescribed daily doses of pearl powder. Her signs of liver heat were rage, red tongue with yellow fur, and a bowstring pulse. Her underlying dissatisfaction and frustration with her marriage were left unacknowledged and unheard. A Chatino woman described a similar situation, "He hits me, then he goes to the mountain to bring me herbs for *muina*." On our way to a sacred site, my teacher picked *yerba*

*de muina* flowers to place at the site as both offering and petition for resolution of his anger.

Headache is associated with heat (or wind generated from heat) and the liver among both the Chatino and the Chinese.

While sadness is a cause of illness in both cultures, only the Chinese specifically contrast sadness with anger in terms of *yin* and *yang* (Table 6.1.) The Chinese "seven emotions" are *bei yu* (grief and sadness, affect the lung) *kong jing* (fear and fright, affect the kidney) *si* (or *si lu*, overthinking, affects the spleen), *xi* (joy, affects the heart), *nu* (anger, affects the liver).

According to López Austin (1980, Vol. 1: 296), the Aztecs considered *vergüenza* (shame) to cause the exterior to be cold (*enfriar la supericie*), and the opposite of *ira* (*enojo*, anger). While the Chatino consider *vergüenza* to be an emotion that causes illness, commonly diarrhea, which, in a general sense, is cold, they did not specify *vergüenza* as cold, or contrasted with anger.

### **Pulsing Abdominal Pain: *Latido* and Jumping Pain**

*Latido* is a major complaint among the Chatino (Chapter 3). In Chinese medicine, "jumping pain" (*tiao tong*) is a symptom associated with stagnant *qi* or blood. (Blood stasis may result from prolonged *qi* stasis.) I first learned of jumping pain in a Chinese medical context during a clinical demonstration by Miriam Lee, a California acupuncturist, with a young woman, in 1981. Miriam Lee pointed out the abdominal pulse, and had each of us palpate the woman's abdomen. She treated her with points for the abdomen: bilateral Pericardium-6 (*nei guan*) and right side Spleen-4 (*gong sun*) (see comment on "meteorism")

below). The woman burst into tears after the half hour treatment, following removal of the needles.

I have subsequently found "jumping pain" in my own practice. For example, one woman (Germany, 1987) in her early twenties complained of metrorrhagia (spotting between periods), and presented with a bowstring pulse, red tongue, yellow fur, and a pulsing abdominal lump. I diagnosed her condition as liver heat which had progressed from liver *qi* congestion. Following Miriam Lee's example, I applied the same points to the young woman. She experienced a similar emotional release some hours following the treatment. (Rage and grief are intimately related, and release of suppressed rage can occur through crying. In Chinese medicine, anger is the emotion of the liver, and tears are the secretion of the liver.)

Although, as the above examples illustrate, abdominal palpation is part of Chinese medicine, "jumping pain," is rarely mentioned in Chinese medical texts. I found a single obscure reference to jumping pain in a book on diagnosis (Cheng et al. 1984: 127). In a section describing differentiation of blood stasis by body area, under "blood stasis below the diaphragm," are three symptom clusters pertaining to epigastric blood stasis, abdominal blood stasis, and kidney deficiency chronic diarrhea. Of these, only abdominal blood stasis is characterized by jumping pain: "Abdominal blood stasis is often indicated by a lump in the abdomen, palpable jumping pain (*tiao tong*), and the pain falls on the right when lying on the right side, and to the left when lying on the left side." [Sun (1988: 54), in his book on cancer treatment and prevention, in the section on abdominal palpation, refers to "moving *qi*, and firm pain in response to pressure

*(dong qi, an zhi lao ruo tong)*" in the umbilical area as signs of liver *qi* congestion. Sun does not specifically mention "jumping."]

Abdominal palpation is an important diagnostic method in Japanese medicine today (especially in shiatsu, Japanese acupressure) that developed from ancient Chinese sources, most notably the *Nan Jing* [Difficult Classic, alternately translated as the Canon of Perplexities, ca. 100 B.C.E.-100 A.D. (Matsumoto and Birch 1988: 454)]. Matsumoto and Birch (1988) authored one book on abdominal diagnosis in English, "Hara Diagnosis: Reflections on the Sea," now a popular teaching text in schools of Oriental medicine in the United States, that draws on these modern and ancient sources. Lumps, tension or pulsing in the different areas of the abdomen pertain to the five major organs (Matsumoto and Birch 1988: 29, 336-337, 341-342). (The area around the umbilicus pertains to the spleen, to the right of the umbilicus to the lung, to the left of the umbilicus to the liver, above the mid-way point between the umbilicus and the sternum to the sternum pertains to the Heart, and from the lower half of the abdomen to the pubic bone pertains to the kidney). The one exception is "moving *qi* between the kidneys," a slight gentle normal pulsing around or below the umbilicus found with deep pressure (Matsumoto and Birch 1988: 109, 244, 254, 315-316, 342). Most Japanese practitioners agree that abdominal pulsings felt are the abdominal (descending) aorta. One Japanese practitioner disagrees, and feels that while pulsing with deep pressure may be the aorta, superficial pulsing is the superior mesenteric artery (Matsumoto and Birch 1988: 254).

The *Nan Jing* also describes *yin* and *yang* abdominal lumps. *Yang* lumps are associated with digestion, whereas *yin* lumps are associated with the five



internal or *yin* organs and change in accordance with the five seasons. Of particular interest is the "running piglet" *yin* lump of the kidneys that "occurs in the small abdomen [below the umbilicus] and rises up to below the sternum" (brackets in the original text, Matsumoto and Birch 1988: 340) which is reminiscent of Chatino "rising *latido*" (Chapter 3). Ou et al. (1980: 143) provide that "running piglet" (*ben zhu*) is "a syndrome characterized by a flow of gas rushing upward from the lower abdomen to the throat." [O'Connor and Bensky (1981: 289) list "intestines (hard) 'like a drum'" (*gu chang*) as an indication for acupuncture point Sp-4 (*gong sun*), which Ou et al. (1980: 228) translate as "meteorism," defined as "abdominal distention due to gas in the intestines or in the peritoneal cavity; tympanites" (McKechnie 1983: 1133).]

"Pulsings or palpitations are usually signs of vacancy" or deficiency (Matsumoto and Birch 1988: 254). This statement lends support to the Chatino view of *latido* as a sign of debility (Chapter 3). In Matsumoto and Birch's text scant reference is made to heat or cold in relation to abdominal diagnosis, whereas repletion (excess, *shi*) and vacancy (deficiency, *xu*) are emphasized. For example, on palpating the skin temperature, the authors suggest that heat is a sign of repletion and cold of vacancy (Matsumoto and Birch 1988: 251). The Chinese classic *Su Wen* (Simple Questions or Essential Questions) states that cold can cause blood and *qi* to stagnate and form abdominal lumps (Matsumoto and Birch 1988: 105). Matsumoto and Birch do not discuss heat as a factor in abdominal pulsing, a major cause of *latido* among the Chatino.

Among different Mesoamerican groups, *latido* is sometimes considered an organ (e.g., Yucatan Maya *tipte*'), sometimes a health condition, and sometimes

both [e.g., Highland Maya *me' winik* (Berlin and Jara 1993: 671), Purépecha *latido* (Young 1981: 50)]. Among the Chatino (and the Chinese), *latido* is regarded only as a symptom. Berlin and Jara (1993) found that Highland Mayan *me' winik*, characterized by jumping pain, is often equivalent to a Western medical diagnosis of chronic gallbladder disease (cholecystitis).

### **Fright and Soul Loss**

*Espanto*, also known as *susto*, is a Latin American illness category characterized by a diffuse group of bodily symptoms of which tiredness, lack of appetite, weight loss, weakness, and lack of motivation are the most common (Browner et al. 1988). Fright, the chief factor in *susto* (O'Neill 1975), causes soul loss. For the Chatino, the main symptoms of *espanto*, "when one falls," are sleeping during the day and sadness. "When the whole body trembles," another symptom of *espanto*, would be considered wind in Chinese medicine (see wind and fright, above). The Chatino usually treat fright with *limpias* (with *copal* and candles in Zenzontepec, washing with cooked rue and basil in Tataltepec). Among the Chatino of Tataltepec, a *bule* (gourd, *Lagenaria siceraria*, Cucurbitaceae) is sometimes used to call back the lost soul.

Fright, although a minor emotion in secular ("official," traditional) Chinese medicine, still figures in Chinese folk medicine. Soul loss, caused by fright, is the Hong Kong Chinese folk diagnosis for amnesia (even from temporary memory loss due to fear, as in children failing exams from blanking out), anaphylactic shock, sudden hysteria and other mental disorders (Anderson and Anderson 1978: 79). In Taiwanese folk medicine, soul baskets (*gai hun*, soul cover) are made to

recapture souls lost because of fright, which is common in children (Gould-Martin 1978: 51, 53) and ritual cleansings with rice for soul loss are performed (Ahern 1978: 31).

### **Dampness**

Dampness, a minor category in Chinese medicine, characterized by swelling, overlaps with Chatino *hinchazón*. Chinese signs of dampness are:

head dizzy and heavy, deafness; body feels heavy, arms and legs heavy, numb, and painful, severe joint pain; chest feels oppressed, epigastric lump, low appetite, nausea, abdominal distention and pain, diarrhea, urine dark yellow with blood, vaginal discharge; heaviness and pain of lower limbs, swelling, numbness or heel pain; tongue pale and tender, sides enlarged with tooth marks, pulse deep and slow (Cheng et al. 1984: 200).

In both cultures, dampness may be hot or cold, as swelling is further classified by red or white/pale coloration. In Chinese medicine, gastrointestinal symptoms are also associated with dampness. Chinese gastrointestinal symptoms of dampness include diarrhea, abdominal distention and pain, and could be considered analogous to Chatino *empacho* and diarrhea.

### **Illustrative Case Histories**

Case 1. A fifty-one year old woman from Manos de Señor took herbs for *aire* in alcohol: *ajo*, *yukundo*, *guaco*, *yerba de aire*, *ruda*. Her tongue had thin white fur; the anterior portion of the tongue had small fine cracks. The tongue fur was dry. The pulse was excessive (large), especially the right middle position (spleen). Her chief complaints were leg pain and spasms, cold and painful low back and sacrum. The back pain extended to the abdomen. She had a headache

in the eye region. She said she had "*hemorragia*," that her period lasts four days but the bleeding is excessive. The herbs for *aire* she took were hot (warming), and alcohol is also considered hot.

From a Chinese perspective, dry tongue and fine cracks are a sign of *yin* deficiency and heat, while the pulse, white tongue fur and feeling cold indicate spleen *qi* and *yang* deficiency. Low back pain indicates kidney, and headache in the eye region suggested to me that the Bladder meridian, a *yang* aspect of the kidney, was also implicated. In a mixed case of *yin* and *yang* deficiency, each deficiency is addressed in turn, during successive treatments, based on the predominant complaint at the time of treatment. I treated acupuncture points that warm and strengthen the kidney *yang*, the low back and uterus: Bladder 23 (*shen shu*) with needles and warm moxa, and Kidney 3 (*tai xi*), Spleen 6 (*san yin jiao*), Bladder 40 (*wei zhong*) with needles only. She had no headache after the treatment.

Case 2. Sometimes Chatino descriptions of *aire* resemble anxiety or panic attacks. A woman in her thirties complained of *ataques* and *aire* in her chest, pain and palpitations, "Then my heart (*corazón*) starts to jump." She had a bitter taste in the mouth after drinking water. Her appetite was good. Her pulse was deep, weak and fine (*xi*, thready). Her tongue had thin yellow fur, hard to make out in the dark of the hut with a flashlight. In Chinese medicine, palpitations are often associated with the Heart, while chest pain can also be due to liver *qi* congestion (constrained liver *qi*). Bitter taste in the mouth and yellow tongue fur further supported a diagnosis of liver *qi* congestion. The acupuncture points I chose affect both Heart and liver, and treat the chest and digestion by spreading

the liver *qi*: Pericardium 6 (*nei guan*) bilaterally and Spleen 4 (*gong sun*) unilaterally on the right side. (Compare cases treated with the same points in "Pulsing Abdominal Pain" above).

### **Medicinal Plant Use**

The Chatino often use plants singly and fresh (Table 6.3). External use in poultices and baths is common. When plants are taken internally, often the expressed juice of a single plant is used or the plant or plant part is boiled to make a tea. Some people believe it is not safe to use more than one plant at a time. Plants may also be taken in teas, and less frequently, in combination with other plants. Typical durations for treatment are "just once" or "three mornings." Plants are seldom stored for later, or out-of-season use. Plants may be applied externally in the field, where they are found, and are not always carried back to the house. "*Como siempre hay muchas* (there are always a lot)" is the commonly stated reason for the lack of need to store plants. One woman explained that if a quantity for more than a day's (or three days') use is gathered, the illness will last longer.

In contrast to the Chatino, the Chinese prefer to use dry herbs in formulas boiled for about one hour to a thick dark tea. Herb teas are believed to be more efficacious than herb pills or tinctures. Formulas will commonly have as many as twelve to fourteen different herbs. Teas may be taken two or three times a day, for weeks or months at a time. The practitioner may adjust or change the formula based on the client's response to treatment. Manipulative therapies may be combined with herbal treatment. Urban practitioners are usually divorced from

the collecting and processing of the plants. Hot, cold and neutral herbs are combined in a proportion that is believed to correspond to and counterbalance the degree of hot or cold in the client. Herbs are selected based on a conceptualization of the function of the organs of the body in addition to the hot-cold and empirical properties of the herbs. Chinese use of formulas bears greater resemblance to urban Mexican herbal practice (see Zapotec medicine, below) and diverges from the Chatino use of herbs.

### **ZAPOTEC MEDICINE**

Zapotec medicine has been studied extensively (e.g., Messer 1978, Frei 1997, Aguilar Castro 1992) and is not summarized here. Nevertheless, my observations, based on participant observation and interviews with two Zapotec healers during visits in 1991, 1993, and 1994, are interesting from a comparative perspective (mentioned in "Conclusions," below). One of the healers is a monolingual Spanish man from San Agustín Yatareni in the Central Valley of Oaxaca, Rogelio Vásquez. The other is a bilingual woman from the Sierra Juarez, doña Enriqueta Contreras. Both these healers place considerable attention on magical cures of *susto*, the Spanish term used by the Zapotec for magical fright. Massage and *limpia*, ritual cleansings with aromatic herbs and alcohol, and raw whole eggs rubbed over the body, are often part of the cure in both their practices. The healers will often palpate the affected area as part of a physical examination prior to treatment. Both have a clientele of approximately ten to twenty people a week. Both collect large quantities of plant material to dry for later use in their busy practices. Both boil their herbs for not more than five or ten minutes,

according to doña Queta, "so that they don't lose their substance." Both healers buy natural and pharmaceutical products to augment the herbs in use in their practices.

Sr. Vásquez usually uses herbs singly, given once or for three consecutive days, in a manner reminiscent of Chatino automedication. A single cup of herb tea is drunk at the end of the healing ritual. Sometimes, for severe or chronic cases, a bottle of prepared tea is also given, or more rarely, a bundle of dried herbs is given for home preparation during three consecutive days. Sr. Vásquez does not disclose his remedies to his patients ("so that the herbs will have effect, because sometimes people say they have already taken that herb") nor does he refer his patients to Western doctors. Sr. Vásquez' clients are generally from his village of about 2000 inhabitants. He listens intently to his patients' relationship problems and is familiar with the social context of their problems.

Doña Queta, on the other hand, regularly prescribes bags of dried herbs with instructions for treatment lasting ten days to two weeks. She carefully measures a sample dosage per cup of water in a napkin for the patient to follow. Often, subsequent bags of herbs will be prescribed at future planned visits. Continual herb use over a period of weeks or months is common, with herbs taken two or three times a day. She prescribes combinations of herbs, usually three or four, but some preparations have as many as sixteen different herbs. She considers her conceptualization of the body and organ function when prescribing her formulas, so that for uterus and ovary problems such as infertility and uterine tumors, she will always add a kidney herb. Even when the chief complaint is not gynecological, she will listen with a stethoscope to the abdomen and if the

circulation to the area is obstructed or diminished, she will add a kidney herb. She also considers the whole person when prescribing. An example of her holistic perspective is the addition of an herb for anemia to a formula of mainly diuretic kidney herbs to give additional support to a person with dark yellow, occasionally painful urination, and acid stomach, since she knows that he is a binge drinker. She explains the herbal formulas to her patients when asked. Doña Queta also makes and sells herbal products (tinctures, soaps, salves, syrups, and prepared mixtures of dry herbs) at traditional medicine fairs and conferences.

Doña Queta frequently cites her ordination as a healer by God, and explains that God reveals the plants to her when she "travels" with the sacred mushroom (*Psilocibin*). Since she has worked for various governmental health agencies for over twenty years as a midwife and health promoter, she does not hesitate to refer difficult cases to the health authorities for diagnosis and possible treatment. In her past work with the National Indigenous Institute (INI) she taught courses in midwifery and traditional healing. She enjoyed encouraging people to be familiar with their own resources so that they can help themselves and others. Doña Queta's patients come from different parts of the state of Oaxaca, traveling long distances to see her. She is quick to ask about the history surrounding the problem, and family problems such as alcoholism and sorcery.

Based on observations gained during visits in July-August 1991 and November 1992 to San Agustín Yatareni, Zapotec women self medicate in the home, usually with one to four herbs, applied externally or in tea. Chronic illnesses may be treated with regular use of herbs. Periodic visits to different reputed healers for treatments usually involving *limpia*, massage, or *temascal*



(traditional steam bath) are also a strategy for dealing with chronic problems. These women are concerned about sweating or coming from a warm room and then exposing themselves to cold (cf., Foster 1994: 42, 46). One mother threw a shirt over her thirteen year old son's head as he left the room at night to urinate after lying in bed so he would not be harmed by the cold air. *Susto*, cold air, evil air (Kearney 1972), and airs of dead people, especially those who may have died in road accidents, are frequently mentioned causes of illness.

### **CHINANTEC AND CHINESE BLOOD**

The traditional medical concept of blood is especially important in the diagnosis and treatment of women's disorders among the Chinantec and as part of a therapeutic regimen during the naturally stressful and demanding times of pregnancy and parturition. The fetus is believed to attach itself to the mother's spine which is "weakened" by the growing fetus utilizing the mother's nutrients, hence fortifying herbs are used to "strengthen the back and womb" (Browner 1985a, b). In Chinese thought, the uterus, spine, and back all correspond to the kidney and may be considered a single unit for therapeutic purposes. (The uterus is governed by spleen, liver and kidney.)

Cold can easily enter the wombs of menstruating women, and slow blood flow (Browner 1985). According to Chinese medicine, cramping and dysmenorrhea (painful menstruation) are often due to cold in the uterus. In acupuncture outpatient clinics in China, the first treatment for menstrual cramps is application of heat locally with burning moxa, to warm the uterus and dispel cold.

Excessively hot blood may interfere with normal menstruation. Heat may eventually lead to dryness and reduced blood flow (Browner 1985). While among the Chinantec, heat and dryness appear to be related, in China these refer to distinct illness categories. Excess heat may initially increase the blood flow, causing menorrhagia, excessive uterine bleeding, but, over time, the fluids of the body may become depleted with resulting dryness ("*yin* deficiency") and amenorrhea. *Yin* deficiency can be a worsening progression from blood deficiency.

In the case of a nine year old Chatino boy in Juquila, a curandera diagnosed a chronic rash as the result of "heat due to lack of blood." This diagnosis provides further support for my idea that heat, in Oaxaca, among various indigenous groups, may correspond to the heat accompanying deficiency of *yin* in Chinese medicine, and that both excess and deficient heat are recognized as distinct conditions, but not so differentiated and named. (Compare the example under "Hot and Cold" above.)

Differentiation of symptoms based on blood in Chinese medicine includes deficient blood, blood stasis (sometimes called congealed, stagnant, or clotted blood), and hot blood. Plants prescribed in Chinantec medicine for blood may cool the blood, dissolve blood clots, revive the blood, or tonify the back and womb (Browner 1985a, b). Plants for blood disorders in Chinese medicine tonify the blood, activate the blood and expel stagnation, and stop bleeding by either removing blood stasis, astringing, cooling, or warming (Chengdu Zhongyi Xueyuan 1978: 228-229, 234, 239, 244, 246, 307, Hubei Zhongyi Xueyuan 1979: 15). Plants for these analogous categories are analyzed for possible common

chemical constituents in Chapter 6. The Chatino use hot plants for uterine bleeding due to cold *aire* having entered the womb, such as *Ageratina tomentella* (Asteraceae, listed under *aire* and *maldad*, Chapter 3), and plants for contused blood (*mallugón*), e.g., *Persea americana* (Laureaceae) and *Geranium* sp. (Geraniaceae) (Chapter 3).

## CONCLUSIONS

The Chinese make many more category distinctions when grouping symptoms for diagnosis than the Chatino. Nevertheless, the overall similarity of symptoms in many diagnostic categories is remarkable, especially when one considers that two diverse and distant cultures, one with a written tradition and a market economy, the other an oral tradition and based on subsistence agriculture, share a similar basic interpretation of pathology. Differences exist in the distinction between supernatural and natural, the causes of illness, the diagnoses, and the use of herbs. Plants mirror the medicinal concepts of the cultures in question. Parallels found in the medicinal concepts are therefore expected to reflect parallels in the composition or effect of the plants used in a cultural context (Table 6.4). Chapter 7 is dedicated to the search for these correspondences.

Unschuld (1985: 99-100) suggests that Chinese medical theory describing elaborate relationships between the organs coincided with increased transportation routes and expanded exchange of goods. Medical theory mirrored the sociopolitical circumstances of the time. The Chatino subsistence lifestyle, and physical isolation in a mountainous region with limited accessibility do not lend themselves to a view of the body as a web of interrelated parts. Chatino plant use,

using a single plant for a single symptom, are consistent with their remote and relatively isolated experience, and support Unschuld's assertion that medical theory reflects the prevailing world view and historical setting. Possibly, doña Queta's use of formulas, and her conceptualization of the body are influenced by and reflect her urbanization. Her markedly different use of herbs could be due to a greater Spanish influence, or simply that Zapotec and Chatino practice have always been so distinct from one another.

Due to the importance of wind in Chatino medicine, I am tempted to speak of a three part classification, of wind, heat and cold, as the underlying organizing principles, rather than a duality. Buddhism brought the Ayurvedic *tri-dosa* theory to China, and one passage from 151 A.D. quoted by Unschuld (1985: 143) refers to three "grave illnesses (*da bing*)," or *dosa*, wind, heat and cold, but the Ayurvedic tri-partite classification did not gain much influence in China (Unschuld 1985: 141-142). Although in present-day Chinese medical practice, wind has retained distinction as a preeminent cause of illness, and heads the list of pathogenic factors (the six evils, *liu xie*), wind does not compete with *yin yang*, hot and cold as a theoretical organizing principle.

**Table 6.1: Relationship between aspects of the body and the hot and cold qualities that are the same for the Chatino and the Chinese.**

Body Aspect	Quality	
	Cold	Hot
internal	spleen	liver
external	feet	head
external	abdomen	back
color	white	red, yellow
emotion	sadness <sup>1</sup>	anger
sensation	cold	heat, fever
urine	enuresis	burning, red
stool	diarrhea	constipation
pulse	slow	rapid

Cold=Chatino *jlya*, Chinese *yin* and *han*

Hot=Chatino *tyikie'*, Chinese *yang* and *re*

<sup>1</sup>Sadness in Chinese medicine only; shame in Aztec medicine, but not Chatino.

**Table 6.2: Relationship between the color of the symptoms and the hot and cold qualities that are the same in Chatino and Chinese medicine.**

Body Aspect	Quality and Color	
	Cold & White	Hot & Red
edema	white	red
diarrhea/dysentery	white <sup>1</sup> , green	red, yellow
urine	clear	dk yellow, red
eyes		red, yellow
skin	pale	red, red spots

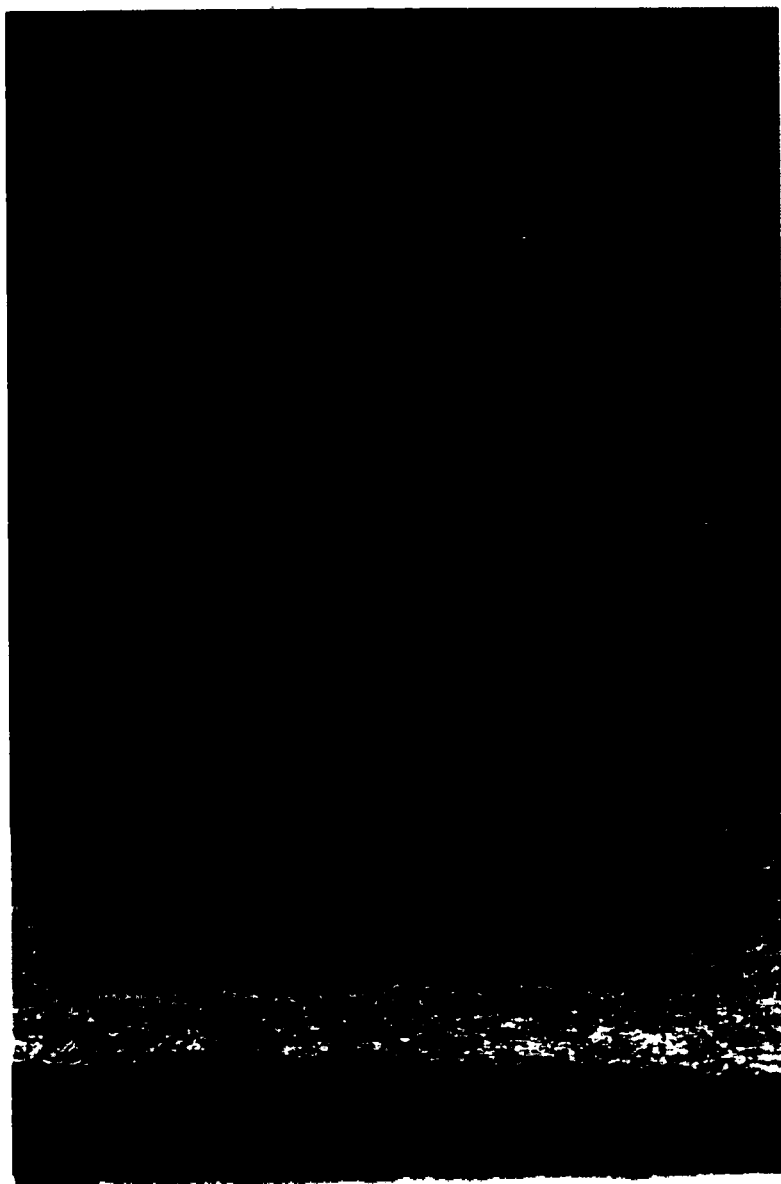
<sup>1</sup> White only in Chatino medicine.

Table 6.3: Methods of preparation and use of medicinal plants in Chatino and Chinese medicine.

Chatino	Chinese
often singly external use or tea short duration (1-3 days) once a day often fresh	complex formulas tea preferred long treatments 2-3 times per day dry

Table 6.4: Examples of plants used for similar diagnostic concepts by the Chatino and Chinese.

Hot & Red Symptoms	Cold Plants for Hot Symptoms	
	Chatino	Chinese
edema	<i>Tournefortia densiflora</i> (Boraginaceae) <i>hierba del cancer</i> <b>kitsë' ndsukua' jlya</b>	<i>Coix lacryma-jobi</i> (Poaceae) <i>yi yi ren</i>
diarrhea & dysentery	<i>Hibiscus sabdariffa</i> (Malvaceae) <i>jamaica kie nga'a</i>	<i>Scutellaria baicalensis</i> (Lamiaceae) <i>huang qin</i>
urine	<i>Zornia</i> sp. (Fabaceae) <i>hoja cen, hierba de calor</i>	<i>Akebia trifoliata</i> (Lardizabilaceae) <i>mu tong</i>
eyes	<i>Rosa centifolia</i> (Rosaceae) <i>rosa de castilla</i>	<i>Cassia obtusifolia</i> (Fabaceae) <i>jue ming zi</i>
skin	<i>Solanum americanum</i> (Solanaceae) <i>hierba mora nguitsi kata</i>	<i>Paeonia</i> spp. (Paeoniaceae) <i>mu dan pi, chi shao</i>



**Figure 6.1:** Pre-Columbian statue depicting *aire* as facial paralysis. From the collection of the Museo Nacional de Antropología e Historia, Mexico City.

## **Chapter 7: Statistical Analysis of Chinantec Medicinal Plants for Blood and Phytochemistry**

### **INTRODUCTION**

As outlined in Chapter 1, I hypothesized that plants used for similar traditional functions or diagnostic concepts, such as for wind, heat, cold or contused blood, would contain similar phytochemical constituents corresponding to these uses. The stimulating beverages, coffee, tea, and maté, are a good example of convergence of plant use across cultures from distinct regions of the world. Maté from the New World, coffee from Africa, and tea from Asia all contain caffeine, a phytochemical constituent. Although these plants are botanically unrelated, all are used as stimulants in a similar social context in diverse cultures (Simpson and Ogorzaly 1986). I endeavored to find similar analogies in an ethnomedical context.

Plants used to treat the liver illnesses which manifest as "heat" in both cultures may share similar chemical constituents such as tannins. Alternately, plants used to treat a "hot" disease may have different chemical constituents that produce a similar pharmacological effect, such as sedation. These kinds of correlations may be useful in identifying medicinal properties of plants used in herbal therapy. They may also be useful in clarifying the Western medical meaning of "hot" and "cold" and other traditional diagnostic concepts. Plants used medicinally, by analysis of their therapeutic action and chemical constituents, could be informative about the diagnoses themselves or the way people perceive illness.



Examination of trends in medicinal plant use associated with chemistry has followed chemosystematic methods whereby plants are grouped by family for statistical analysis (e.g., Gottlieb et al. 1995, Kapur et al. 1992, Moerman 1979, 1991, 1993, 1996). The main focus of these works has been to analyze plant families in terms of their importance as food and/or medicine. Bye (pers. comm.) has extended work on one complex of five plants, four *Psacalium* species and *Acourtia thurberi*, with a single folk designation, *matarique*, which have the same medicinal uses, morphological characteristics and organoleptic properties (Linares and Bye 1987), to look for similar chemicals as the basis for similar pharmacological effects in these two genera in the Asteraceae.

#### ANALYSIS

This analysis uses Browner's (1985a, b) illness categories and the Chinantec plants ascribed to those uses. Twenty-seven Chinantec plants (Table 7.1) from published data by Browner (1985b) were analyzed for possible correspondence between traditional functions (uses) and plant chemistry. The traditional functions or uses of the plants for women's reproductive health, or "blood" disorders, were described in considerable detail by Browner (1985a, b). "Blood" is a broad illness category related to plant use that includes cooling plants for heat in the blood, warming plants for cold womb, plants to expel wind (*aire*) and remove clots (for a complete list of sub-categories of "blood" see Table 7.2). Heat in the blood causes excessive uterine bleeding or "*hemorragia*." Plants that stop uterine bleeding are often also considered cooling. Amenorrhea (menstrual bleeding diminished or absent) and infertility are caused by "'cold womb" from

frequent childbirth. Plants for cold womb are generally warming and/or irritating (*irritante*). Plants used as abortifacients "dry and burn the uterus" or are irritating. A single plant may be associated with more than one traditional function (Table 2). For example, *Brickellia secundiflora* stops bleeding, removes clots, strengthens the back and womb, removes wind, stops pain and relieves tiredness.

## **Methods**

I initially created two matrices (Table 7.2, Table 7.3) for the 27 plants. Variables for the first matrix consisted of the sub-categories for "blood" (Table 7.2). Variables for the second data matrix were main classes of chemical compounds (Table 7.3). Chemical data were obtained from NAPRALERT (Natural Products Alert), an ethnopharmacological database of the University of Illinois at Chicago under Dr. Norman A. Farnsworth's direction. NAPRALERT data assign a chemical class for each compound listed.

Of the 58 identified plants Browner (1985b) listed, chemical data were requested for 49 plants (Table 7.4). Of the 49, chemical data were only available for the 27 plants included in the analysis (Table 7.1). Data were not requested for eight plants (Table 7.5) (of the 58) because no traditional functions associated with blood were specifically mentioned for them by Browner (1985b). For example, most plants that speeded labor were warming and/or irritating, but these indications were not specified for the Chinantec plants *Crescentia cujete* (Bignoniaceae), *Cuminum cyminum* (Apiaceae), *Piper umbellatum* (Piperaceae) and *Turbina corymbosa* (Convolvulaceae) (Table 7.5). As another example, post-partum plants work by way of healing the birth scar and calming the nerves,

strengthening the back and womb, reviving the blood, stopping bleeding, removing clots, and/or relieving pain by expelling *aire*, but none of these explanations was given for *Eupatorium (Ageratina) ligustrinum*. *Phaseolus* sp., which speeds labor and is considered irritating, was also excluded from the analysis.

Table 7.6 shows how the 27 plants included in the analysis are representative of the 58 plants for blood described by Browner (1985b) by their specific uses. Analyses were carried out on the complete set of 27 plants and on a reduced set of 25 that excluded two plants, *Ananas comosus* and *Eysenhardtia polystachya*, which were used as abortifacients to "dry and burn the uterus," but not as therapeutic agents. Results are shown with and without these two plants.

When comparing hot-cold uses reported by Ortiz de Montellano and Browner (1985) and Browner (1985b), inconsistencies were found that pertained to this analysis. According to Browner, in the Chinantec folk classification, *Baccharis glutinosa* has two varieties based on color with distinct properties, green and cooling, and white and warming. *Baccharis glutinosa* was reported as warming by Ortiz de Montellano. I considered *Baccharis glutinosa* warming for the purposes of the analysis. *Persea americana* was listed by Browner (1985b) as both warming and cooling, while Ortiz de Montellano and Browner (1985b) listed *P. americana* as warming. I therefore considered *P. americana* warming. (*Mimosa albida* was listed by Browner as both hot and cold, but was not included in the analysis. It is included in Table 7.7 among the 58 plants classified as warming.) These inconsistencies may be due to informant variation in reporting of uses.

Of the 13 traditional functions associated with blood mentioned in Browner (1985a, b), 11 were retained for the analysis (Table 7.2). One function, "revives blood," was excluded because no plants for which chemical data were available belonged to this category. As only one plant in the data set, *Baccharis glutinosa*, "heals the birth scar and calms nerves," "heal the birth scar" was also not included as a category for analysis.

Based on my understanding of Chatino and Chinese medicine (Chapter 3, Chapter 4, Chapter 6), I suspect that "remove clots" may include the contused blood of "wounds and bruises" (Table 7.2). I retained these as two distinct categories in the analysis because for the Chinantec, "clots" may refer specifically to those expelled from the uterus. I included menorrhagia and menstrual hemorrhaging under "stop bleeding."

A master list of 86 chemical classes was compiled from an initial NAPRALERT list and from the data (Table 7.7). Of the first 54 chemical classes considered for inclusion, variables were excluded from the analysis when no presence data were available. These are labeled in Table 7.7 as "0 cases." Variables containing data for only a single taxon were also excluded, marked "1 case." For example, data for sapogenins were available only for *Allium sativum*, while only *Zea mays* showed presence of polyphenols, hence these chemical classes were not included in the analysis. A minimum of two data points for any given variable was accepted. A single data point was accepted for any given taxon. For example, the only chemical data point available for *Tanacetum parthenium* is the presence of sesquiterpenes (Table 7.3). Because the compounds of greatest medicinal interest are generally secondary compounds,

products of primary metabolism, including proteins, carbohydrates, and lipids, were excluded. The final chemical matrix for Chinantec plants for blood consisted of 18 variables (Table 7.3). Only chemical data for the plant part used were included (For example, Table 7.3 lists only chemical classes found in the style of *Zea mays* flowers).

When the species epithet was unknown, as with *Pinus* and *Begonia*, I included chemical data from more than one species in the genus. Work done in Mexico, on *Pinus cembroides*, *P. discolor* and *P. johannis* mentioned only monoterpenes (Zavarin and Snajberk 1986, not seen), and for *P. oocarpa* also flavonoids (Weissman and Meier 1989, not seen). Mexican members of *Pinus* are nevertheless likely to also have benzenoids, diterpenes, sesquiterpenes, steroids, triterpenes, tannins and phenylpropanoids, as research on the genus worldwide indicates. I did not employ data from other species of the same genus with limited data when the species name was known.

## **Results**

### ***Hierarchical Clustering of Plant Use***

The binary squared euclidean measure was used to generate a proximities matrix of uses (Table 7.2) for the agglomeration methods (Figs. 7.1-7.4). Results from two agglomeration methods, furthest neighbor (complete linkage) and Ward are shown. As mentioned in Chapter 4, Ward and complete linkage agglomeration methods, which gave the most interpretable cluster solutions, were selected *post facto*. Everitt (1993: 68) discusses problems with chaining that can

arise from single linkage, UPGMA (average linkage, between groups), centroid and median methods.

Figure 7.1 and 7.2 show dendrograms of 27 plants by use. The Ward dendrogram (Fig. 7.2) gives an interpretable three cluster solution, fairly consistent with the Chinantec major medical concepts of heat, cold and wind. A three cluster solution is consistent with Browner's (1985a, b) and my understanding of the Chinantec uses, which is the reason I chose this solution for discussion over the alternatives. When the two plants that "dry and burn the uterus" were removed (*Ananas comosus* and *Eysenhardtia polystachya*, shown in bold, Fig. 7.2), and the analysis was repeated, a three cluster solution was obtained (Fig. 7.3). The three clusters in Fig. 7.3 consist of plants that (1). cool the blood and stop bleeding (*Begonia* spp. to *Mentha citrata*), (2). remove wind and stop pain (*Litsea glaucescens* to *Brickellia secundiflora*) (3). warm the blood and are irritating to the uterus (*Persea americana* to *Adiantum poiretti*). *Brickellia secundiflora* and *Baccharis glutinosa* also relieve tiredness and strengthen the back and womb. *Adiantum*, which removes clots and is not warming, clustered with the warming irritating plants, and was the only exception among the warming plants.

### ***Hierarchical Clustering of Plant Chemistry***

Among the chemistry data (Table 7.3), zeros reflect missing data as well as absences. I therefore selected a coefficient that minimized the bias effect of absences on the cluster solution of the chemistry matrix (Table 7.3). Jaccard's coefficient ( $a/a+b+c$ ), which excludes joint absences from the denominator, and

weighs matches and non-matches equally, was used to generate the proximity matrix for the agglomeration (cluster) methods (Figs. 7.5, 7.6) from Table 7.3. [Another possible measure to use would be Dice, also called Czekanowski or Sorenson, which also excludes joint absences from the denominator and doubles the weight of matches ( $2a/2a+b+c$ ).] Because of missing data, contingency tables and chi-square values could not be used to evaluate the significance of the cluster solutions.

Figures 7.4-7.6 show Chinantec plants used for blood disorders clustered by 18 chemical variables. There is no correspondence between these dendrograms and the dendrograms based on use (Figs. 7.1-7.3).

#### ***Hierarchical Clustering of Uses by Chemical Variables***

In order to examine the relationship between chemistry and use directly, a third data matrix was compiled from the use (Table 7.2) and chemical (Table 7.3) matrices based on counts of the chemical classes for each use (Table 7.8). The uses were defined as the taxa or cases, while the chemical classes were the variables. This rectangular similarity matrix was converted into distances for cluster analysis. Coefficients for deriving distance matrices from frequency (count) data are chi-squared and phi-squared. Cluster results using the chi-squared measure are shown.

The four cluster solution of Fig. 7.7 separates warming and irritating, cooling plants that stop bleeding, plants that remove wind and stop pain, and a fourth group that removes clots and heals wounds and bruises. The congruence of the results by two different methods (Fig. 7.7 and Fig. 7.8) supports the validity of

the result. When "dry burn" was removed, the same four clusters were maintained, again obtainable by the two methods employed (Fig. 7.9 and Fig. 7.10). This supports an alternate presentation of Chinantec medicine to include four major conceptual categories. Fig. 3.1 shows a similar representation of Chatino medicine, with contused blood (*mallugón*) standing alone.

If we consider a three cluster solution for Figs 7.9 and 7.10, in which plants that remove wind and stop pain and plants for wounds, bruises and removing clots are joined, then we can consider that plants in these categories may share certain therapeutic characteristics. Perhaps plants that remove wind, stop pain and remove clots all promote circulation.

When the analysis was repeated with only eight uses and 13 chemical class variables, the three cluster solution joined remove clots with stop pain and remove wind, to again reflect the three culturally salient categories of heat, cold and wind obtained in Fig. 7.3. The same cluster solution was obtained for the average linkage method (not shown).

## **Discussion**

### ***Cluster Results Reflect Main Use Categories***

The three cluster solution for plant use in Fig. 7.3 reflects the three culturally salient medical concepts of wind, heat and cold. Three groups comprised of the six sub-categories, (1). remove wind and stop pain, (2). stop bleeding and cool blood heat, and (3). warm blood and irritating, share many of the same plants (Table 7.4, Table 7.9). The number of plants in each of these three groups also reflects the importance of these traditional concepts in relation



to women's blood disorders. Wind, a concept of major cultural importance, has relatively low representation among plants used for blood disorders. Combined with plants that stop pain, the proportion of plants for wind in the sample and overall increases. In Chatino and Chinese medicine, wind can be hot or cold. If plants for wind are predominately analgesic, then we may consider wind as a referent for pain, independent of or in conjunction with heat and cold. A fourth category related exclusively to blood, is clots, which, in Fig. 7.7-7.10 combines with wounds and bruises. Interestingly, the clusters of uses by chemical class variables appear to reflect these three or four major medical concepts more accurately than clusters based solely on use (Figs. 7.1-7.3).

#### ***Relative Importance of Use Categories***

Shared plants for the various categories in the analyzed sample of 27 plants can be seen in Table 7.6. Of the original identified 58 plants for blood disorders (Browner 1985b), the six paired uses (cooling and stop bleeding, warming and irritating, remove wind and stop pain) shared members as follows. Of 24 plants that stop bleeding, 13 (54%) also cool blood heat, while 93% (13 of 14) cooling plants stop bleeding. Of nine plants that stop pain, five plants (56%) remove wind, whereas all five plants that remove wind also stop pain. Eight plants that warm the blood are also irritating (62% and 73% respectively).

Browner (1985b) and Ortiz de Montellano and Browner (1985) evaluated Chinantec plants on the basis of their Western (e.g., emmenagogue, abortifacient, for dysmenorrhea) and Chinantec therapeutic functions. Hence, 19 abortifacients and plants that speed delivery were considered irritating by Ortiz de Montellano

and Browner (1985) although the Chinantec designated only 11 plants that speed delivery as irritating, and three abortifacients, *Styrax*, *Ananas* and *Eysenhardtia*, were considered to dry and burn the uterus (Browner 1985b). [Two plants listed as irritants by Ortiz de Montellano and Browner (1985) were not listed in Browner (1985b), *Chrysanthemum parthenium* and *Coriandrum sativum*. *Baccharis glutinosa*, *Matricaria courrantiana* were listed as only warming (Browner 1985b), and *Crescentia cujete*, *Turbina corymbosa* as speeding delivery (Table 7.5).] Hence, my observation that the Chinantec recognized 11 irritating plants out of 13 that are warming (Table 7.6), and my conclusion that heat is the more culturally salient category, are inconsistent with Ortiz de Montellano and Browner's (1985) conclusion that "'irritant' is the more salient property." Ortiz de Montellano and Browner (1985) consider heat "not amenable to empirical verification that would be acceptable to modern science."

Ortiz de Montellano and Browner (1985) reported tannins for *Lippia alba* and *Mimosa albida* not mentioned in the NAPRALERT database used in this analysis. They stress the usefulness of tannins as antiseptics in post-partum baths.

#### ***Proportions of Chemical Classes in Relation to Use***

Table 7.8 shows the proportion of chemical classes for each use. For example, among the ten plants that stop bleeding, flavonoids, monoterpenes, sesquiterpenes, and benzenoids are proportionately high (100%, 90%, 90% , 70% respectively). However, the predominance of these types of compounds for this use is not immediately evident by looking at the plant families for this use. While Asteraceae and Lamiaceae are usually high in flavonoids, monoterpenes and

sesquiterpenes, only three of the ten stop bleeding plants belong to these two families. Alkaloids are also higher among cooling and stop bleeding plants than any other group, 80% and 70%, compared to 40% for warming and irritating plants, and 40% and 30% for wind and stop pain. When looking for novel compounds that stop uterine bleeding, these trends might provide clues as to the type of compound to consider first.

Warming plants, while also relatively high in flavonoids (80%) and sesquiterpenes (70%), were higher in phenylpropanoids than any other group (70%). Other values for warming plants ranged from 0 to 60%. Plants that removed clots were low in all classes of compounds (0-30%) except sesquiterpenes (70%). Plants that stop pain, the category most closely associated with wind, were, like warming and cooling plants, relatively high in flavonoids (70%) and sesquiterpenes (80%), with only moderate presence of monoterpenes (60%) and low ranges for all other compounds (0-30%).

Within any given broad chemical class, there can be considerable variation in compound structure and function. For example, among diterpenes are the resin diterpenes such as abietic acid found in *Pinus*, the toxic diterpenes found in the leaves of *Rhododendron*, and gibberellins, a plant growth hormone (Harborne 1973: 104). Therefore, general observations regarding correlations of plant use and chemical class would necessitate further study to determine the specific components of a chemical class that might be medicinal. The cluster analysis results are therefore best viewed as exploratory and hypothesis generating (Everitt 1993: 10). A larger sample size may provide more conclusive results.

## **Conclusions and Future Work**

The cluster results of chemical classes corresponding to plant use reflect the salient Chinantec diagnostic concepts (Figs. 7.7-7.12) and are consistent with the field observations for the Chatino regarding the main illness categories (Chapters 3, 6).

Patterns of broad chemical classes correspond to specific traditional functions (uses). The whole plant, plant part, or combinations of plants used medicinally contain many constituents, probably many of them active, with multiple effects on the body. The different chemical profiles corresponding to plant use may more accurately reflect the combined, synergistic effect of secondary compounds on the body which is unique to medicinal plants (e.g., Capasso 1984) than the "single bullet" approach to plant prospecting and drug development.

My results, if applied to a larger sample, may be predictive of trends in correspondence of chemical class to traditional functions. Extension of the analysis to plants used across cultures for a similar use would provide a larger sample. I have compiled a comparable list of 122 Chinese plants for women's blood disorders (Table 7.9) for future analysis.

I have outlined a methodological approach to the question of correspondence of plant use and chemistry. This analytical method can be applied to a wide range of traditional concepts. For Chinese medicine, I analyzed 59 plants used for wind disorders (not shown), with the intention of eventually

**completing an analysis of Chatino plants used for wind, a major Chatino illness concept.**

Table 7.1: 27 Chinantec plants for blood disorders.

- |  |  |
|--|--|
| 1. <i>Adiantum poiretii</i> (Pteridaceae)                                      | 14. <i>Lippia alba</i> (Verbenaceae)         |
| 2. <i>Allium sativum</i> (Liliaceae)   | 15. <i>Lisea glaucescens</i> (Lauraceae)     |
| 3. <i>Ananas comosus</i> (Bromeliaceae)  | 16. <i>Mentha citrata</i> (Lamiaceae)        |
| 4. <i>Baccharis glutinosa</i> (Asteraceae)                                     | 17. <i>Montanoa tomentosa</i> (Asteraceae)   |
| 5. <i>Begonia</i> sp. (Begoniaceae)  | 18. <i>Origanum vulgare</i> (Lamiaceae)      |
| 6. <i>Brickellia secundiflora</i> (Asteraceae)                                 | 19. <i>Persea americana</i> (Lauraceae)      |
| 7. <i>Chenopodium ambrosioides</i> (Asteraceae)                                | 20. <i>Pinus</i> sp. (Pinaceae)              |
| 8. <i>Cinnamomum zeylanicum</i> (Lauraceae)                                    | 21. <i>Piper auritum</i> (Piperaceae)        |
| 9. <i>Citrus aurantiifolia</i> (Rutaceae)                                      | 22. <i>Pluchea odorata</i> (Asteraceae)      |
| 10. <i>Citrus aurantium</i> (Rutaceae)   | 23. <i>Ricinus communis</i> (Euphorbaceae)   |
| 11. <i>Dodonaea viscosa</i> (Sapindaceae)                                      | 24. <i>Ruta chalapensis</i> (Rutaceae)       |
| 12. <i>Eupatorium</i> ( <i>Critonia</i> ) <i>quadrangulare</i><br>(Asteraceae) | 25. <i>Tagetes lucida</i> (Asteraceae)       |
| 13. <i>Eysenhardtia polystachya</i> (Fabaceae)                                 | 26. <i>Tanacetum parthenium</i> (Asteraceae) |
|  | 27. <i>Zea mays</i> styles (Poaceae)         |

Table 7.2: Data matrix of Chinantec plants for blood and their traditional functions (based on Browner 1985b). Columns: 1. stop bleeding 2. cool blood heat 3. remove clots 4. strengthen back & womb 5. remove wind 6. stop pain 7. warm blood 8. irritante 9. dry/burn uterus 10. wounds & bruises 11. relieve tiredness.

	1	2	3	4	5	6	7	8	9	10	11
<i>Adiantum poiretii</i>	0	0	1	0	0	0	0	0	0	0	0
<i>Allium sativum</i>	0	0	0	0	0	0	1	1	0	0	0
<i>Ananas comosus</i>	0	0	0	0	0	0	0	0	1	0	0
<i>Baccharis glutinosa</i>	1	0	0	1	0	0	1	0	0	0	1
<i>Begonia</i> spp.	1	1	0	0	0	0	0	0	0	0	0
<i>Brickellia secundiflora</i>	1	0	1	1	1	1	0	0	0	0	1
<i>Chenopodium ambrosioides</i>	0	0	0	0	0	0	1	1	0	0	0
<i>Cinnamomum zeylanicum</i>	0	0	0	0	0	1	1	1	0	0	0
<i>Citrus aurantiifolia</i>	0	1	0	0	0	0	0	1	0	0	0
<i>Citrus aurantium</i>	1	1	0	0	0	1	0	1	0	0	0
<i>Dodonaea viscosa</i>	1	0	0	1	0	0	0	0	0	0	0
<i>Eupatorium (Critonia) quadrangulare</i>	0	0	1	0	1	1	0	0	0	0	0
<i>Eysenhardtia polystachya</i>	0	0	0	0	0	0	0	0	1	0	0
<i>Lippia alba</i>	1	0	1	0	1	1	0	0	0	0	0
<i>Litsea glaucenscens</i>	0	0	0	0	1	1	0	0	0	0	0
<i>Mentha citrata</i>	1	0	0	0	0	1	0	0	0	1	0
<i>Montanoa tomentosa</i>	0	0	0	0	0	0	1	1	0	0	0
<i>Origanum vulgare</i>	0	0	0	0	0	0	1	1	0	0	0
<i>Persea americana</i>	1	0	1	0	0	0	1	1	0	1	0
<i>Pinus</i> spp.	1	0	0	0	0	0	0	0	0	0	0
<i>Piper auritum</i>	0	0	0	0	0	0	1	0	0	0	0
<i>Pluchea odorata</i>	0	0	0	0	1	1	0	0	0	0	0
<i>Ricinus communis</i>	0	1	0	0	0	0	0	0	0	0	0
<i>Ruta chalapensis</i>	0	0	0	0	0	0	1	1	0	0	0
<i>Tagetes lucida</i>	0	0	0	0	0	0	1	0	0	0	0
<i>Tanacetum parthenium</i>	0	0	1	1	0	1	1	1	0	0	0
<i>Zea mays</i> (styles)	1	1	0	0	0	0	0	0	0	0	0

**Table 7.3: Data matrix of Chinantec plants for blood and major chemical classes. Columns: 1. flavonoid 2. O<sub>2</sub> heterocycle 3. benzenoid 4. sulfur cpd 5. alicyclic 6. coumarin 7. misc lactone 8. vitamin 9. monoterpene 10. sesquiterpene 11. diterpene 12. triterpene 13. steroid 14. carotenoid 15. alkaloid (unspecified) 16. saponin 17. tannin 18. phenylpropanoid.**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
<i>Adiantum poiretii</i>	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
<i>Allium sativum</i>	1	1	0	1	0	0	0	1	0	0	1	0	0	0	1	1	0	1
<i>Ananas comosus</i>	0	1	1	1	0	0	1	0	1	1	0	0	0	1	1	0	0	1
<i>Baccharis glutinosa</i>	1	1	0	0	0	1	0	0	1	1	1	1	0	0	0	0	0	0
<i>Begonia</i> spp.	1	0	1	0	0	0	0	0	0	0	0	1	1	0	1	1	0	0
<i>Brickellia secundifolia</i>	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Chenopodium ambrosioides</i>	1	0	1	0	0	0	0	0	1	0	0	1	1	0	0	0	0	1
<i>Cinnamomum zeylanicum</i>	1	1	1	0	0	1	0	0	1	1	1	0	1	0	0	0	0	1
<i>Citrus aurantiifolia</i>	1	0	0	0	0	1	0	1	1	1	0	0	0	0	0	0	0	0
<i>Citrus aurantium</i>	1	0	1	0	0	1	0	0	1	1	1	1	0	1	1	0	0	0
<i>Dodonaea viscosa</i>	1	0	1	0	1	1	0	0	1	1	1	1	1	0	1	1	1	1
<i>Eupatorium (Crotinia) quadrangulare</i>	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
<i>Eysenhardtia polystachya</i>	1	0	0	0	0	1	0	0	0	0	0	1	1	0	0	0	1	0
<i>Lippia alba</i>	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0	0	0
<i>Litsea glaucescens</i>	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Mentha citrata</i>	1	0	0	0	0	0	0	0	1	1	1	1	1	0	1	0	0	1
<i>Montanoa tomentosa</i>	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1
<i>Origanum vulgare</i>	1	0	1	0	0	1	1	0	1	1	1	0	0	0	0	0	0	1
<i>Persea americana</i>	1	0	1	0	0	1	0	0	1	1	1	1	1	0	0	0	1	1
<i>Pinus</i> spp.	1	1	1	0	0	0	0	0	1	1	1	0	1	0	1	0	0	1
<i>Piper auritum</i>	1	0	0	0	0	0	0	0	1	1	0	1	1	0	1	0	1	0
<i>Pluchea odorata</i>	1	0	1	0	1	1	0	0	0	0	0	1	1	0	1	0	1	1
<i>Ricinus communis</i>	1	0	1	0	0	1	0	0	0	0	0	1	1	0	1	0	1	0
<i>Ruta chalapensis</i>	1	0	1	0	0	1	0	0	0	0	1	0	1	0	1	0	1	0
<i>Tagetes lucida</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Tanacetum parthenium</i>	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
<i>Zea mays (styles)</i>	1	1	1	0	0	0	0	0	1	1	1	0	1	0	1	0	1	0



Table 7.4: 49 Chinantec plants submitted to NAPRALERT.

1. *Adiantum poiretii* (Pteridaceae)
2. *Allium sativum* (Liliaceae)
3. *Ananas comosus* (Bromeliaceae)
4. *Anoda cristata* (Malvaceae)
5. *Aphelandra aurantiaca* (Acanthaceae)
6. *Arbutus xalapensis* (Ericaceae)
7. *Baccharis glutinosa* (Asteraceae)
8. *Begonia* sp. (Begoniaceae)
9. *Brickellia secundiflora* (Asteraceae)
10. *Chenopodium ambrosioides* (Chenopodiaceae)
11. *Cinnamomum zeylanicum* (Lauraceae)
12. *Citrus aurantiifolia* (Rutaceae)
13. *Citrus aurantium* (Rutaceae)
14. *Columnnea schiedeana* (Gesneraceae)
15. *Dodonea viscosa* (Sapindaceae)
16. *Eupatorium quadrangulare* (Asteraceae)
17. *Eysenhardtia polystachya* (Fabaceae)
18. *Galium mexicanum* (Rubiaceae)
19. *Gaultheria acuminata* (Ericaceae)
20. *Hybanthus brevis* (Violaceae)
21. *Hydrocotyle mexicana* (Apiaceae)
22. *Indigofera hartwegii* (Fabaceae)
23. *Iostephane trilobata* (Asteraceae)
24. *Lippia alba* (Verbenaceae)
25. *Listea glaucescens* (Lauraceae)
26. *Matricaria courrantiana* (Asteraceae)
27. *Mentha citrata* (Lamiaceae)
28. *Mimosa alba* (Fabaceae)
29. *Montanoa tomentosa* (Asteraceae)
30. *Oenothera rosea* (Onagraceae)
31. *Origanum vulgare* (Lamiaceae)
32. *Persea americana* (Lauraceae)
33. *Phragmites communis* (Poaceae)
34. *Pinus* sp. (Pinaceae)
35. *Piper auritum* (Piperaceae)
36. *Pluchea odorata* (Asteraceae)
37. *Podocarpus matudae* (Podocarpaceae)
38. *Psittacanthus calyculatus* (Loranthaceae)
39. *Quercus elliptica* (Fagaceae)
40. *Ricinus communis* (Euphorbiaceae)
41. *Russelia sarmentosa* (Scrophulariaceae)
42. *Ruta chalepensis* (Rutaceae)
43. *Sambucus mexicana* (Caprifoliaceae)
44. *Selaginella pallescens* (Selaginellaceae)
45. *Struthanthus densiflorus* (Loranthaceae)
46. *Styrax argenteus* (Styracaceae)
47. *Tagetes lucida* (Asteraceae)
48. *Tanacetum parthenium* (Asteraceae)
49. *Zea mays* (styles) (Poaceae)

**Table 7.5: Eight Chinantec plants for which no traditional functions were specified by Browner (1985b).**

1. <i>Clidemia setosa</i> (Melastomataceae)	infertility
2. <i>Crescentia cujete</i> (Bignoniaceae)	speeds labor
3. <i>Cuminum cyminum</i> (Apiaceae)	speeds labor
4. <i>Eupatorium ligustrinum</i> (Asteraceae)	post-partum
5. <i>Euphorbia pulcherrima</i> (Euphorbiaceae)	contraceptive
6. <i>Piper umbellatum</i> (Piperaceae)	speeds birth
7. <i>Pleurothallis cardiothallis</i> (Orchidaceae)	infertility
8. <i>Turbina corymbosa</i> (Convolvulaceae)	speeds labor

**Table 7.6: Number and percentage of plants by use. The number and percentage of plants for both the analyzed group of 27 plants and for all the identified plants for blood listed by Browner (1985) are shown. (The parenthetical number and percentage in Row 3 include three plants that "revive blood.")**

<b>Use</b>	<b>Sample #</b>	<b>% of 27</b>	<b>Total #</b>	<b>% of 58</b>
1. stop bleeding	10	37	24	41
2. cool blood	5	19	14	24
3. remove clots	6	22	9 (12)	16 (21)
4. strengthen back	4	15	5	9
5. remove wind	5	19	5	9
6. stop pain	9	33	9	16
7. warm blood	11	41	13	22
8. irritante	10	37	11	19
9. dry burn	2	7	5	9
10. wounds	2	7	5	5
11. relieve tiredness	2	7	2	3

**Table 7.7: Master list of chemical classes and compounds.**

1. alkane		43. triterpene alkaloid	0 cases
2. alkene		44. sesterterpenealkaloid	0 cases
3. alkyne		45. steroidalkaloid	0 cases
4. alkenyne	0 cases	46. peptide alkaloid	0 cases
5. lipid		47. lactam	0 cases
6. carbohydrate		48. tetraterpenoid	0 cases
7. proteid		49. antibioticsofunk. tructure	0 cases
8. flavonoid		50. saponin	
9. polycyclic		51. tannin	
10. O <sub>2</sub> heterocycle		52. calcium	1 case
11. quinoid/quinone	1 case	53. potassium	1 case
12. benzenoid		54. phenylpropanoid	
13. sulfurcpd		55. misc-acetaldehyde	
14. alicyclic		56. misc-aceticacid	
15. non-alkaloid N-heterocycle	0 cases	57. misc-aceticacid/methyl-thio methyl ester	
16. lignan	1 case	58. misc-acetone	
17. coumarin		59. misc-acrylicacidethyl/methylester	
18. xanthone	0 cases	60. misc-butanol(varied)	
19. misclactone		61. misc-butyrate(varied)	
20. vitamin		62. misc-ethanol	
21. chromone	0 cases	63. misc-ethylacetate	
22. monoterpene		64. misc-formate(varied)	
23. sesquiterpene		65. misc-malonicacidester	
24. diterpene		66. misc-pivalate	
25. sesterterpene	0 cases	67. misc-propanol	
26. triterpene		68. misc-propionate	
27. steroid		69. misc-propylacetate	
28. sapogenin	1 case	70. misc-valerate	
29. cardenolide/bufadienolide	1 case	71. misc-propylketone	
30. carotenoid		72. misc-carbonate	
31. polyprenoid	0 cases	73. misc-methylacetate	
32. alkaloid-misc		74. misc-malicacid	
33. tropane alkaloid	0 cases	75. misc-succinicacid	
34. pyrrolizidine alkaloid	0 cases	76. misc-oxalicacid	
35. indolizidine alkaloid	0 cases	77. misc-citricacid	
36. quinolizidine alkaloid	0 cases	78. misc-magnesiumphosphate	
37. quinoline alkaloid	1 case	79. misc-Na <sub>2</sub> SO <sub>4</sub>	
38. isoquinoline alkaloid	1 case	80. misc-tartaricacid	
39. indole alkaloid	1 case	81. misc-dimethyleneoxide	
40. monoterpene alkaloid	0 cases	82. misc-allylalcohol	
41. sesquiterpene alkaloid	0 cases	83. misc-allylmercaptan	
42. diterpene alkaloid	0 cases	84. misc-calciumoxalate	
		85. misc-germanium	

**Table 7.8:** Use and chemical class similarity matrix of counts. Frequencies are shown in parentheses. Columns: 1. flavonoid 2. O<sub>2</sub> heterocycle 3. benzenoid 4. sulfur cpd 5. alicyclic 6. coumarin 7. misc lactone 8. vitamin 9. monoterpene 10. sesquiterpene 11. diterpene 12. triterpene 13. steroid 14. carotenoid 15. alkaloid (unspecified) 16. saponin 17. tannin 18. phenylpropanoid.

Uses	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
cool blood heat	5(1.0)	1(0.2)	4(0.8)	0(0)	1(0.2)	3(0.6)	0(0)	1(0.2)	3(0.6)	3(0.6)	2(0.4)	3(0.6)	3(0.6)	1(0.2)	4(0.8)	1(0.2)	1(0.2)	2(0.4)
dry burn uterus	1(0.5)	1(0.5)	1(0.5)	1(0.5)	0(0)	1(0.5)	1(0.5)	0(0)	1(0.5)	1(0.5)	0(0)	1(0.5)	1(0.5)	1(0.5)	1(0.5)	0(0)	1(0.5)	1(0.5)
irritant	9(0.9)	2(0.2)	6(0.6)	1(0.1)	0(0)	5(0.5)	1(0.1)	2(0.2)	7(0.7)	8(0.8)	5(0.5)	4(0.4)	4(0.4)	1(0.1)	4(0.4)	1(0.1)	1(0.1)	6(0.6)
relieve tiredness	2(1.0)	1(0.5)	0(0)	0(0)	0(0)	1(0.5)	0(0)	0(0)	1(0.5)	1(0.5)	1(0.5)	1(0.5)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)
remove clots	2(0.3)	0(0)	1(0.2)	0(0)	0(0)	1(0.2)	1(0.2)	0(0)	2(0.3)	4(0.7)	1(0.2)	0(0)	1(0.2)	0(0)	1(0.2)	0(0)	2(0.3)	1(0.2)
remove wind	3(0.6)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	2(0.4)	3(0.6)	0(0)	1(0.2)	1(0.2)	0(0)	2(0.4)	0(0)	2(0.4)	0(0)
stopbleeding	9(1.0)	2(0.2)	6(0.7)	0(0)	1(0.1)	4(0.4)	1(0.1)	0(0)	8(0.9)	8(0.9)	6(0.7)	6(0.7)	5(0.6)	1(0.1)	6(0.7)	2(0.2)	2(0.2)	4(0.4)
stoppain	6(0.7)	1(0.1)	2(0.2)	0(0)	0(0)	2(0.2)	0(0)	0(0)	5(0.6)	7(0.8)	2(0.2)	3(0.3)	3(0.3)	1(0.1)	3(0.3)	0(0)	2(0.2)	1(0.1)
strengthen back	3(0.8)	1(0.3)	1(0.3)	0(0)	1(0.3)	2(0.5)	0(0)	0(0)	2(0.5)	3(0.8)	2(0.5)	2(0.5)	1(0.3)	0(0)	1(0.3)	1(0.3)	1(0.3)	1(0.3)
warm blood	9(0.8)	4(0.5)	6(0.6)	1(0.1)	0(0)	4(0.4)	1(0.1)	1(0.1)	7(0.6)	8(0.7)	6(0.6)	4(0.4)	5(0.5)	0(0)	4(0.4)	1(0.1)	1(0.1)	8(0.7)
wounds	2(1.0)	0(0)	1(0.5)	0(0)	0(0)	1(0.5)	1(0.5)	0(0)	2(1.0)	2(1.0)	1(0.5)	1(0.5)	1(0.5)	0(0)	0(0)	0(0)	0(0)	0(0)

Table 7.9: Master list of 122 Chinese plants for blood disorders. Includes plants that tonify (support, patch, *bu*) *yin*, *yang*, *qi* and blood, move blood stasis (*huo xue*), move *qi* (*xing qi*), warm (*wen*) and cool the blood (*liang xue*).

1. *Achyranthes aspera* (Amaranthaceae)
2. *Achyranthes bidentata* (Amaranthaceae)
3. *Achyranthes longifolia* (Amaranthaceae)
4. *Akebia quinata* (Lardizabillaceae)
5. *Akebia trifoliata* (Lardizabillaceae)
6. *Amomum villosum* (Zingiberaceae)
7. *Angelica sinensis* (Apiaceae)
8. *Aquilaria agallocha* (Thymeliaceae)
9. *Aristolochia manshuriensis* (Aristolochiaceae)
10. *Artemisia anomala* (Asteraceae)
11. *Artemisia argyi* (Asteraceae)
12. *Artemisia vulgaris* (Asteraceae)
13. *Artemisia lavandulaefolia* (Asteraceae)
14. *Astragalus membranaceus* (Fabaceae)
15. *Astragalus mongholicus* (Fabaceae)
16. *Atractylodes macrocephala* (Asteraceae)
17. *Biota orientalis* (Cupressaceae)
18. *Bupleurum chinense* (Apiaceae)
19. *Bupleurum scorzonerifolium* (Apiaceae)
20. *Caesalpinia sappan* (Fabaceae)
21. *Carthamus tinctorius* (Asteraceae)
62. *Gardenia jasminoides* (Rubiaceae)
63. *Imperata cylindrica* (Poaceae)
64. *Leonurus heterophyllus* (Lamiaceae)
65. *Ligusticum wallichii* (Apiaceae)
66. *Ligusticum lucidum* (Apiaceae)
67. *Lindera strychnifolia* (Lauraceae)
68. *Liquidambar taiwaniana* (Hamamelidaceae)
69. *Litchi sinensis* (Sapindaceae)
70. *Litsea cubeba* (Lauraceae)
71. *Lycopus lucidus* (Lamiaceae)
72. *Lycopus parviflorus* (Lamiaceae)
73. *Melia toosendan* (Meliaceae)
74. *Mentha haplocalycis* (Lamiaceae)
75. *Nelumbo japonicus* (Nymphaeaceae)
76. *Morinda officinalis* (Rubiaceae)
77. *Nelumbo nucifera* (Nymphaeaceae)
78. *Ophiopogon japonicus* (Liliaceae)
79. *Paeonia lactiflora* (Paeoniaceae)
80. *Paeonia obovata* (Paeoniaceae)
81. *Paeonia suffruticosa* (Paeoniaceae)
82. *Paeonia veitchii* (Paeoniaceae)

22. *Cephalanoplos segetum* (Asteraceae)  
 23. *Cinnamomum cassia* (Lauraceae)  
 24. *Cirsium segetum* (Asteraceae)  
 25. *Cistanche salsa* (Orobanchaceae)  
 26. *Cistanche deserticola* (Orobanchaceae)  
 27. *Citrus aurantium* (Rutaceae)  
 28. *Clematis armandi* (Ranunculaceae)  
 29. *Clematis montana* (Ranunculaceae)  
 30. *Codonopsis pilulosa* (Campanulaceae)  
 31. *Cornus officinalis* (Cornaceae)  
 32. *Corydalis yanhushuo* (Papaveraceae)  
 33. *Crataegus pinnatifida* (Rosaceae)  
 34. *Curculigo orchioides* (Liliaceae)  
 35. *Curcuma aromatica* (Zingiberaceae)  
 36. *Curcuma kwangsinensis* (Zingiberaceae)  
 37. *Curcuma longa* (Zingiberaceae)  
 38. *Curcuma xanthorrhiza* (Zingiberaceae)  
 39. *Curcuma zedoria* (Zingiberaceae)  
 40. *Cuscuta chinensis* (Convolvulaceae)  
 41. *Cuscuta japonica* (Convolvulaceae)  
 42. *Cynanchum atratum* (Aesclepiadaceae)  
 43. *Cynanchum versicolor* (Aesclepiadaceae)  
 44. *Cynomorium songaricum* (Balanophoraceae)  
 45. *Cyperus rotundus* (Cyperaceae)  
 46. *Dianthus chinensis* (Caryophyllaceae)
83. *Panax notoginseng* (Araliaceae)  
 84. *Patrinia scabiosaefolia* (Valerianaceae)  
 85. *Patrinia villosa* (Valerianaceae)  
 86. *Perillae frutescent* (Lamiaceae)  
 87. *Prunus mume* (Rosaceae)  
 88. *Prunus persica* (Rosaceae)  
 89. *Punica granatum* (Punicaceae)  
 90. *Pyrrosia lingua* (Polypodiaceae)  
 91. *Pyrrosia petiolosa* (Polypodiaceae)  
 92. *Pyrrosia shearei* (Polypodiaceae)  
 93. *Rehmannia glutinosa* (Scrophulariaceae)  
 94. *Rheum officinale* (Polygonaceae)  
 95. *Rheum palmatum* (Polygonaceae)  
 96. *Rheum tanguticum* (Polygonaceae)  
 97. *Rhus chinensis* (Anacardiaceae, galls)  
 98. *Rhus potaninii* (Anacardiaceae, galls)  
 99. *Rhus verniciflua* (Anacardiaceae, galls)  
 100. *Rosa chinensis* (Rosaceae)  
 101. *Rosa rugosa* (Rosaceae)  
 102. *Rubia cordifolia* (Rubiaceae)  
 103. *Salvia miltiorrhiza* (Lamiaceae)  
 104. *Sanguisorba officinalis* (Rosaceae)  
 105. *Sargentodoxa cuneata* (Lardizabillaceae)  
 106. *Schizonepeta tenuifolia* (Lamiaceae)  
 107. *Scutellaria amoena* (Lamiaceae)

47. *Dianthus superbus* (Caryophyllaceae)  
48. *Dioscoreae opposita* (Dioscoreaceae)  
49. *Dipsacus asper* (Dipsacaceae)  
50. *Dipsacus japonicus* (Dipsacaceae)  
51. *Eclipta alba* (Asteraceae)  
52. *Eclipta prostrata* (Asteraceae)  
53. *Epimedium brevicornum* (Berbaceae)  
54. *Epimedium grandiflorum* (Berberidaceae)  
55. *Epimedium macranthum* (Berberidaceae)  
56. *Epimedium sagittatum* (Berberidaceae)  
57. *Eucommia ulmoides* (Eucommiaceae)  
58. *Eugenia caryophyllata*  
= *Syzygium aromaticum* (Myrtaceae)  
59. *Eupatorium chinense* (Asteraceae)  
60. *Eupatorium fortunei* (Asteraceae)  
61. *Eupatorium japonicum* (Asteraceae)
108. *Scutellaria baicalensis* (Lamiaceae)  
109. *Scutellaria viscidula* (Lamiaceae)  
110. *Siphonostegia chinensis* (Scrophulariaceae)  
111. *Sonchus arvensis* (Asteraceae)  
112. *Sonchus brachyotus* (Asteraceae)  
113. *Sophora japonica* (Fabaceae)  
114. *Spatholobus suberectum* (Fabaceae)  
115. *Thlaspi arvense* (Brassicaceae)  
116. *Trachycarpus fortunei* (Arecaceae)  
117. *Trigonella foenum-graecum* (Fabaceae)  
118. *Typha angustifolia* (Typhaceae)  
119. *Viscum album* (Viscaceae)  
120. *Viscum coloratum* (Viscaceae)  
121. *Taxillus chinensis*  
= *Loranthus parasiticus* (Loranthaceae)  
122. *Taxillus sutchuensis*  
= *Loranthus yadoriki* (Loranthaceae)



Figure 7.1: Complete linkage dendrogram of 27 plants by 11 use variables (Table 7.4). Binary squared euclidean is the measure used.

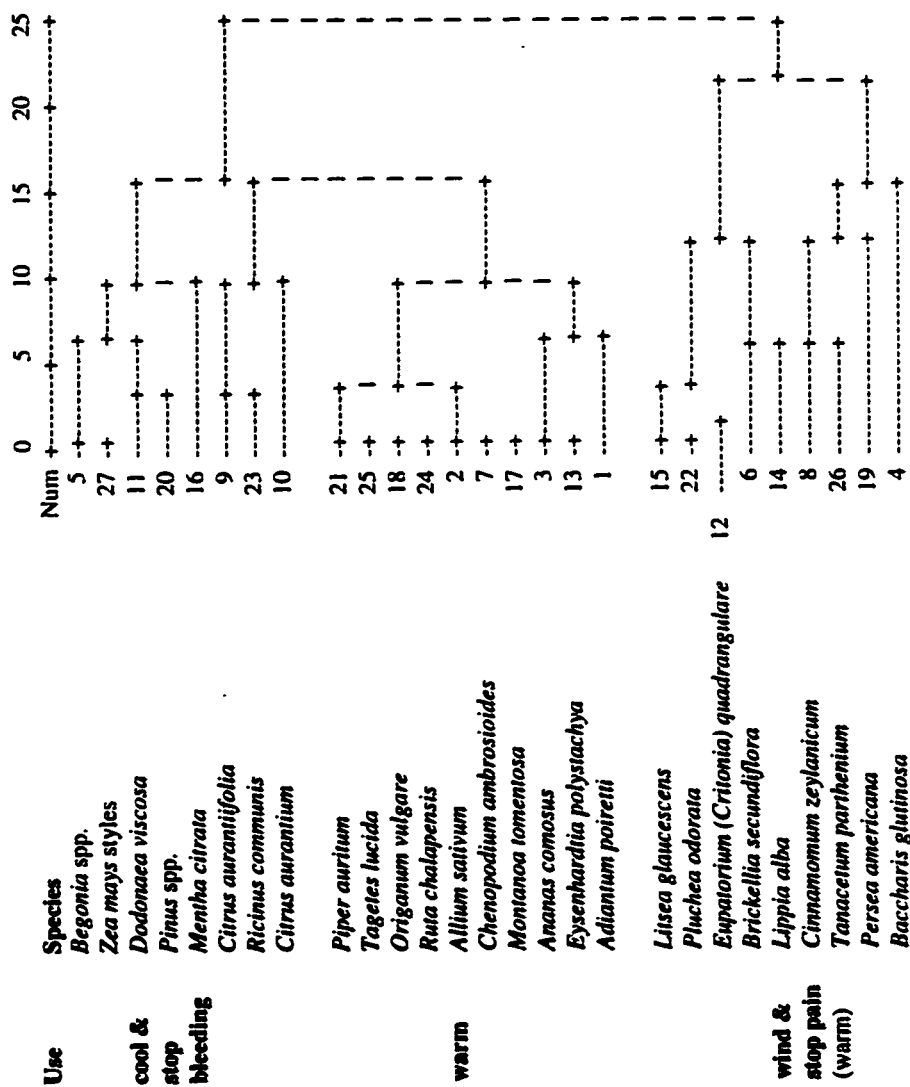


Figure 7.2: Ward dendrogram of 27 plants by 11 use variables (Table 7.4). Binary squared euclidean is the measure used. Plants in bold "dry and burn the uterus" and are discussed in the text. Other exceptions to the three uses shown on the left are in parentheses.

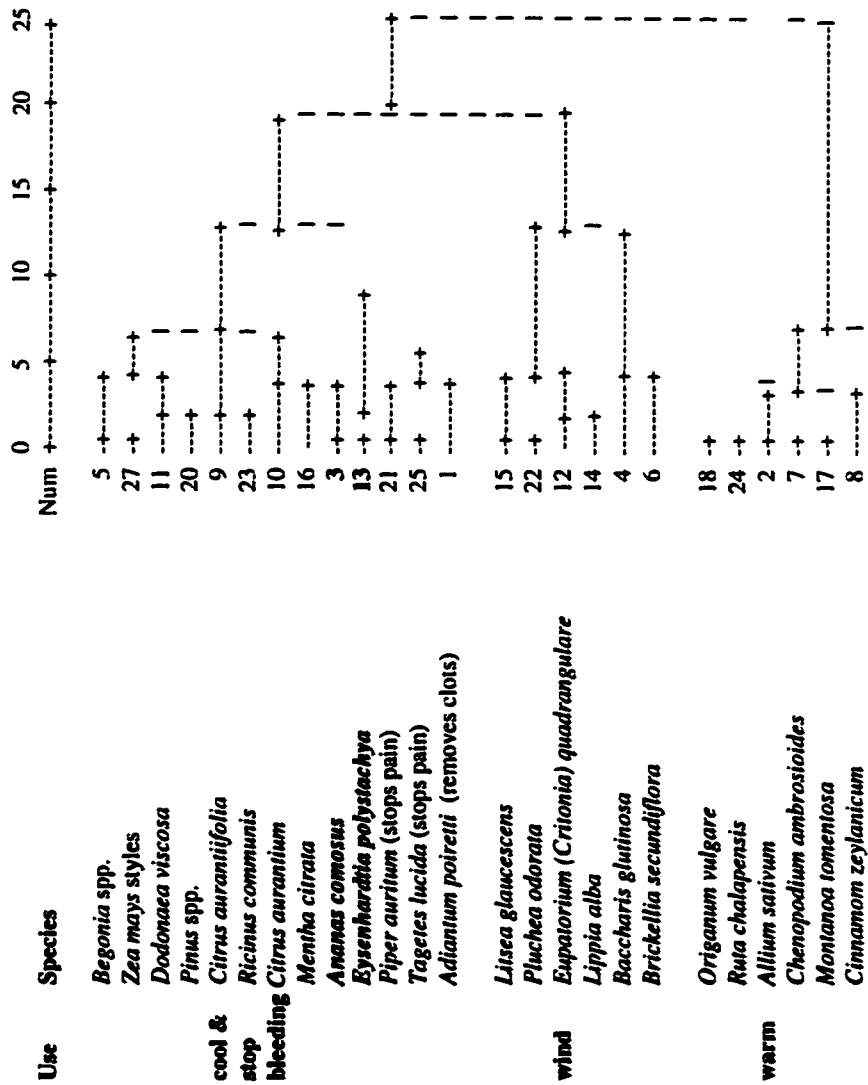


Figure 7.3: Ward method dendrogram showing 25 Chinantec plants clustered by use.

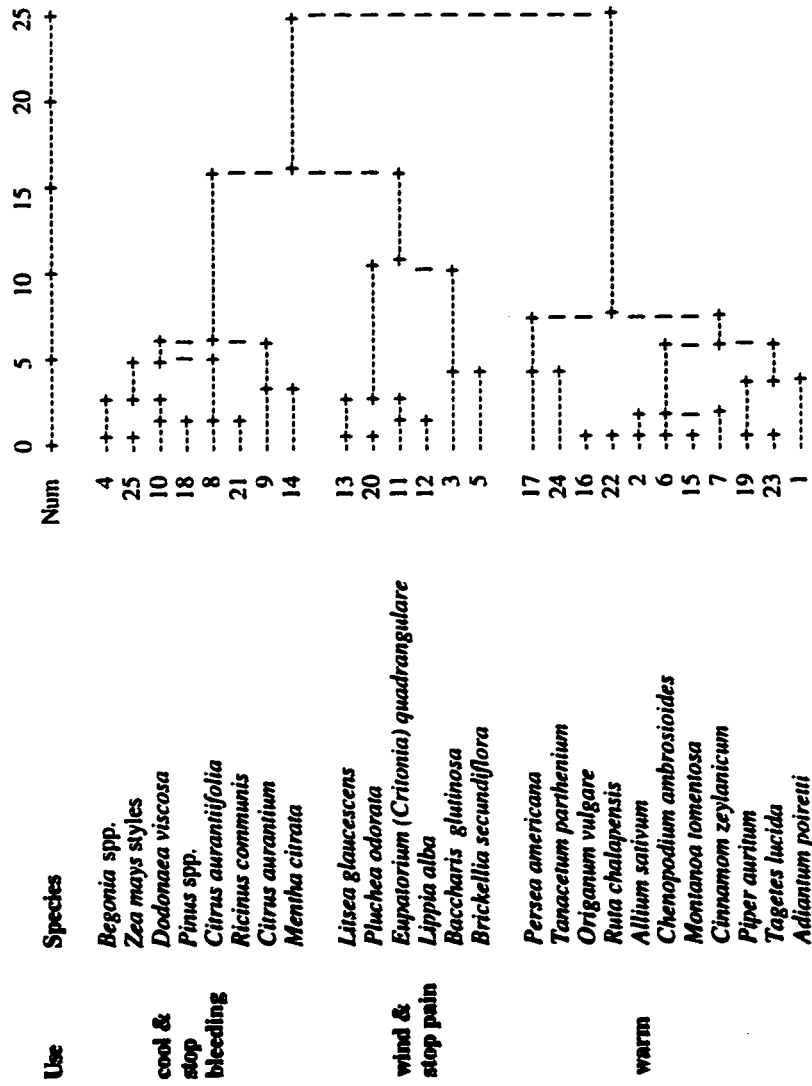


Figure 7.4: Dendrogram of 27 Chinantec plants for blood by 18 chemical variables (Table 7.5) using binary squared euclidean coefficient and Ward's agglomeration method (SPSS). \*Cluster shares high proportion of zeros.

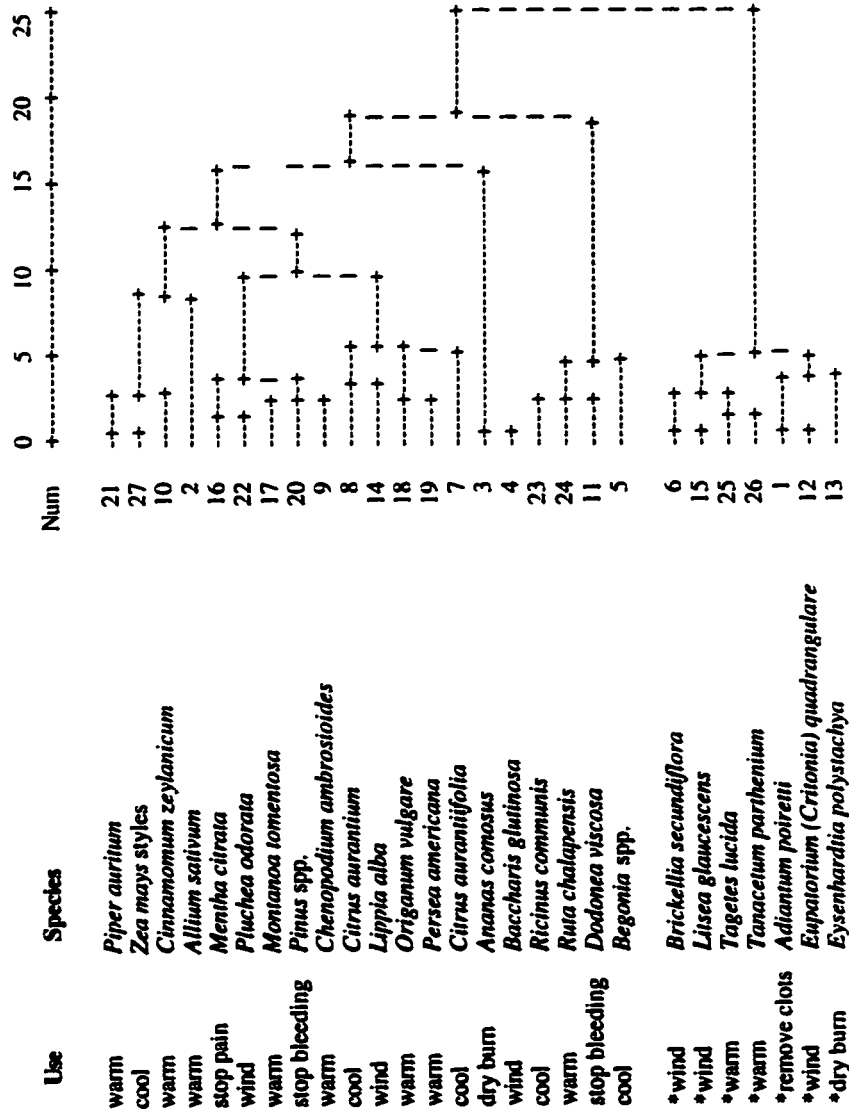


Figure 7.5: Complete linkage (furthest neighbor) dendrogram of 27 Chinantec plants for blood by 18 chemical variables using Jaccard's coefficient (redrawn from Syn-tax).

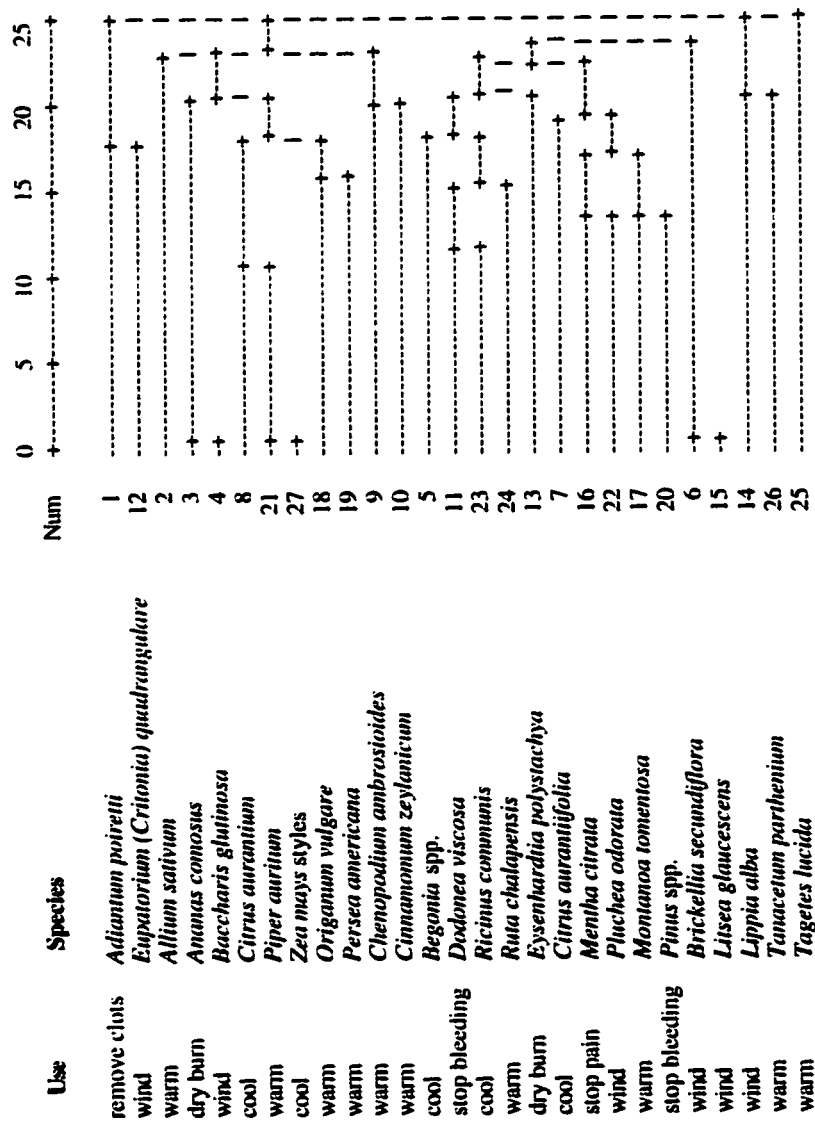


Figure 7.6: Complete linkage (furthest neighbor) dendrogram of 25 Chinantec plants for blood by 18 chemical variables using Jaccard's coefficient (redrawn from Syn-tax).

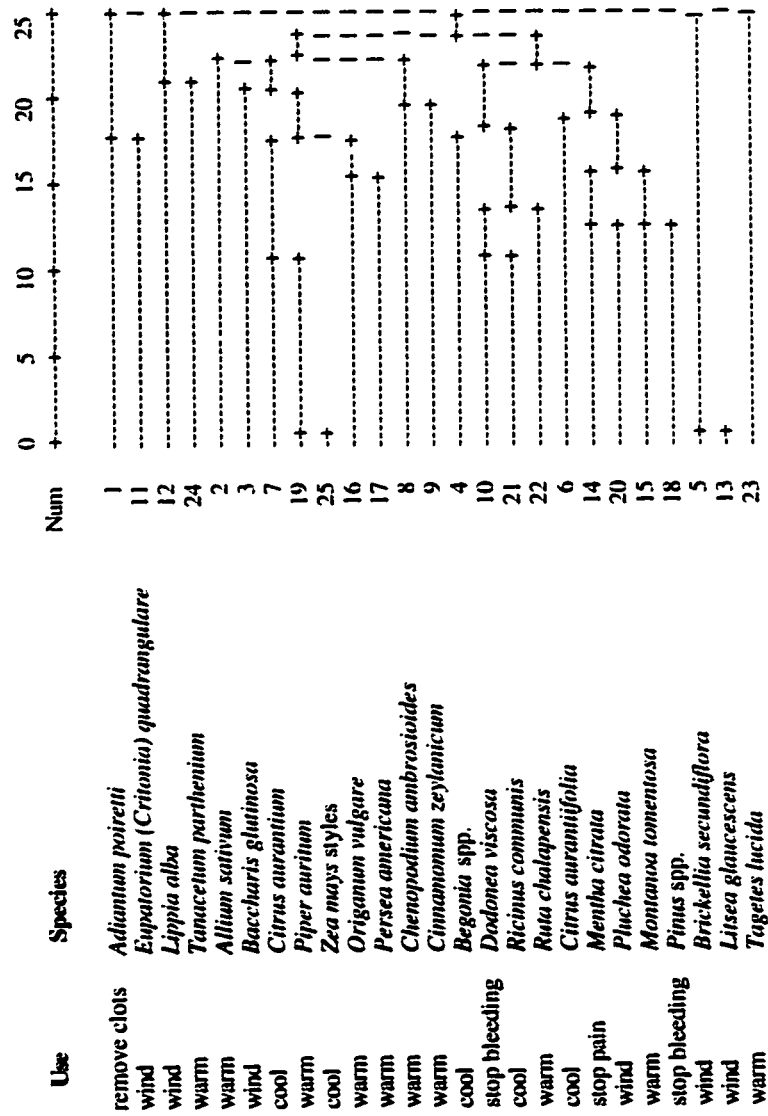


Figure 7.7: Complete linkage dendrogram of 11 uses clustered by 18 chemical classes. Chi-square is the measure used.

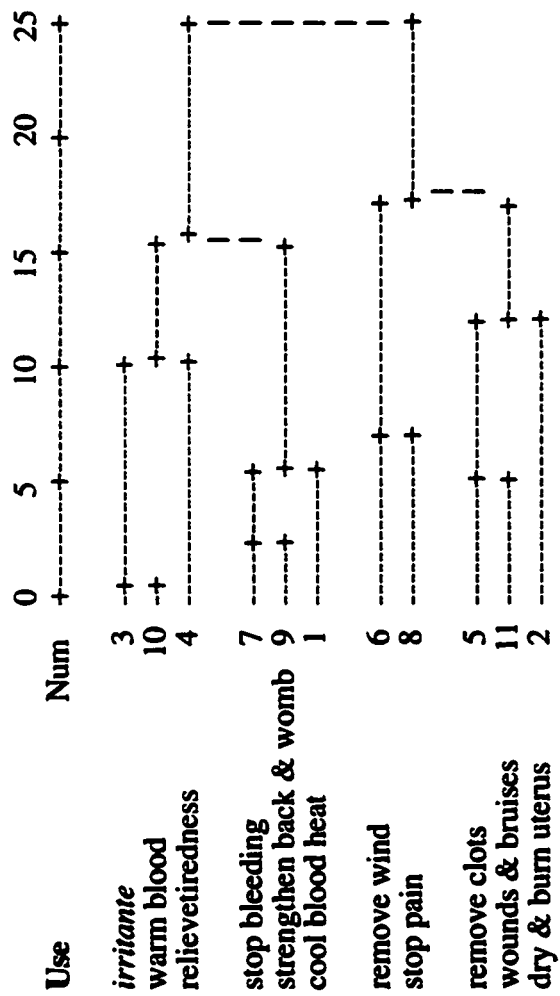


Figure 7.8: Ward dendrogram of 11 uses clustered by 18 chemical classes. Chi-square is the measure used.

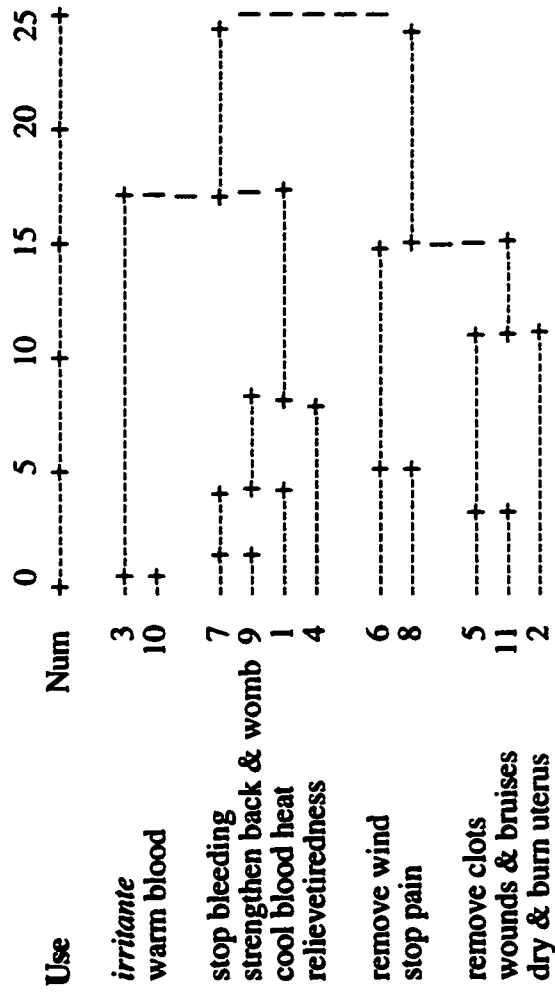




Figure 7.9: Complete linkage dendrogram of ten uses clustered by 18 chemical classes. Chi-square is the measure used. "Dry and burn the uterus" omitted.

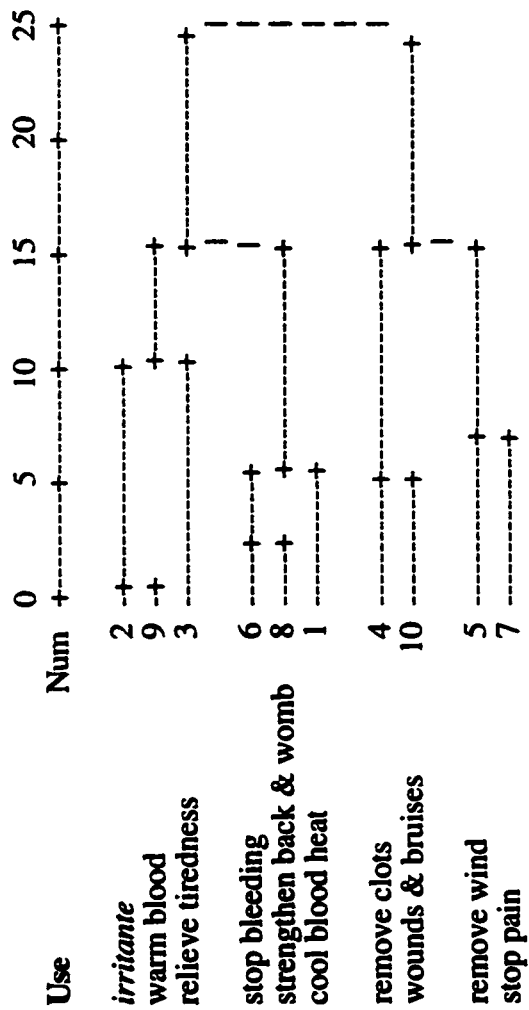


Figure 7.10: Ward dendrogram of ten uses clustered by 18 chemical classes. Chi-square is the measure used. The category, "dry and burn the uterus," was omitted.

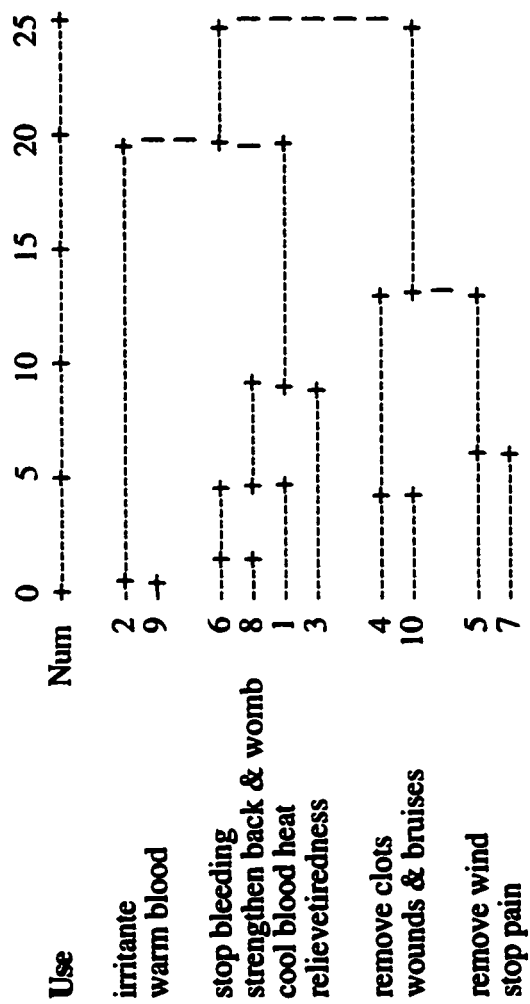


Figure 7.11: Ward dendrogram of eight uses clustered by 13 chemical classes. Chi-square is the measure used.

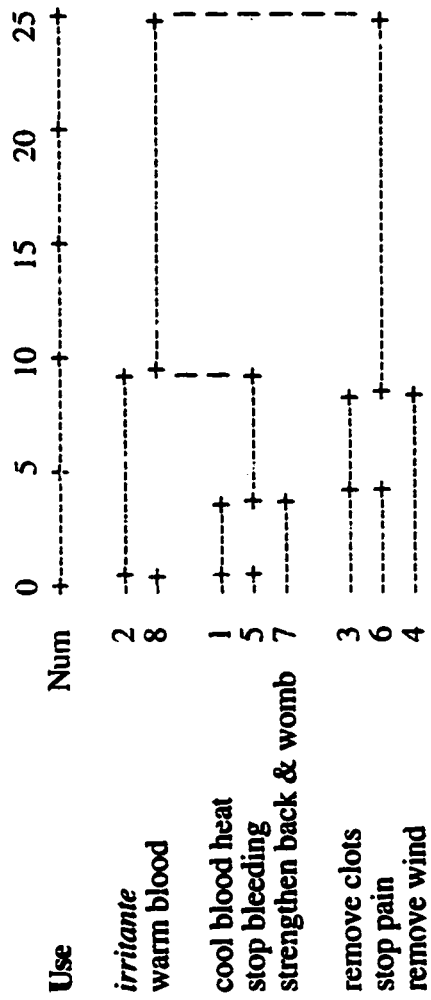
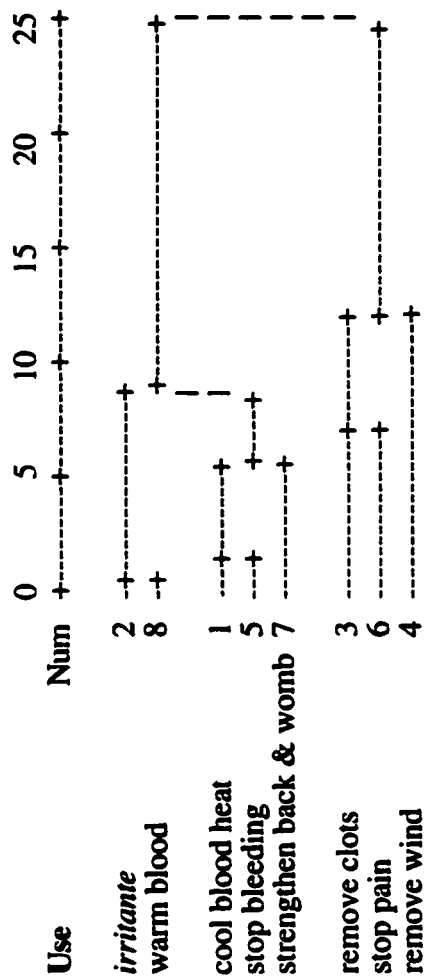


Figure 7.12: Complete linkage dendrogram of eight uses clustered by 13 chemical classes. Chi-square is the measure used.



## **Chapter 8: Conclusions**

In my conclusions I cover three main topics. I open with a discussion of the implications of my findings to the question of origin of humoral medicine in the New World. Two topics central to my work follow, diagnostic concepts in relation to plant use, and issues in comparative medicine. Finally, I outline contributions of my work to Mexico.

### **ORIGIN OF HUMORAL MEDICINE IN THE NEW WORLD**

As one National Science Foundation anonymous grant reviewer wrote, “there is a warm debate in the literature” regarding the origin of humoral medicine in the New World (Colson & De Armellada 1983, Foster 1953, Messer 1987, Cosminsky 1975, Tedlock 1987). I originally thought to avoid controversy and steer clear of the topic altogether, however, my findings no doubt contribute fodder to all (!) sides of the argument. At conferences, the question of origin seems inevitable and inescapable. Hence, I add my point of view regarding how my findings contribute to the debate.

First, we have the problem of defining humoral medicine. Foster (1994) focused his discussion on the ubiquitous concepts of heat and cold, and two concepts noticeably absent from the New World, wet and dry, as essential features of humoral medicine. A third category he felt to be uniformly characteristic of Spanish humoral medicine was the neutral category (Foster 1994: 113-127). He considered concepts such as soul loss, object intrusion and witchcraft to be of indigenous origin and clearly outside humoral medicine.

However, humoral medicine is not just hot-cold, neutral, wet and dry. Other concepts, such as blood, including stagnant blood (cf., Browner 1985a, b) and deficient blood, energy (*fu*erza in Mexico, *qi* in Chinese medicine, *prana* in Ayurveda), wind (*aire* in Mexico, *feng* in Chinese, *vata* in Ayurveda), and emotions are important diagnostic and prescriptive elements of humoral medicine. According to Foster, Chatino medicine would not be considered humoral, despite the importance of heat and cold, blood, and wind in their cosmology and medicine. Foster (1994: 174) wrote, "Humoral medicine is as secular as contemporary biomedicine." Certainly present day Chinese medicine is both humoral and secular. Chatino medicine is most definitely not secular (cf., Charles Leslie's personal communication in Anderson 1987, that in some regions "humoral medicine is less clearly separated from 'personalistic' ideas, and the distinction seems invalid").

According to Foster (1994: 187), "Surviving pre-Hispanic theories are not humoral. They concern such things as soul loss (e.g., *susto*) as a causitive [sic] element, but not hot and cold insults." Since hot and cold are definitely important concepts in Chatino medicine, I am left with the quandary of reclassifying highly personalistic Chatino medicine as humoral. I might conclude that the Chatino somehow incorporated Spanish humoral hot and cold concepts into their personalistic belief system in a highly syncretic fashion.

Fortunately, we have another option. Mexica (Aztec) scholars McKeever Furst (1995: 122-124) and López Austin (1980) provide convincing evidence in support of an indigenous origin for Mesoamerican hot-cold beliefs. We might therefore consider that native traditions, including Aztec, Chatino, Mayan,

Zapotec, Mixtec, Mixe, all had a hot-cold cosmology similar to López Austin's (1980) description of Aztec medicine, that included wet and dry as part of the native sun/fire-water, hot-cold cosmology. Only aspects of Spanish humoral medicine that fit into the Mesoamerican native cosmology were accepted.

Also, we might consider loss, not of the wet and dry concepts, but of the personalistic elements that were prevalent in Mesoamerica, and consistent with Spanish and Arab personalistic ideas such as the evil eye, as the reason for the lack of personalistic beliefs among Tzintzuntzan mestizos. Unschuld (1985: 46-59) describes a progression from belief in witchcraft (characterized by worms in body orifices, the *ku* spirit, to humoral medicine ("medicine of systematic correspondences"). The transformation of the concept of wind is an example of this process of loss of the personalistic aspect in Chinese medicine. Wind, which has a demonological origin in Chinese medicine (evil wind), "remained, up to the present, one of the most important etiological principles in Chinese medicine (Unschuld 1985: 25)." ("Wind causes a hundred diseases.") Evil wind underwent a process of transformation and abstraction that no longer had the evil, demonic connotation. "I suggest that changes in the Chinese belief in the illness-causing potential of wind mark a transition, during the final two or three centuries B.C., from demonological concepts to an idea of influences and emanations originating from the natural environment of substances (Unschuld 1985: 68)." Unschuld discusses this process in great depth.

We could therefore conclude that present day Chatino medicine is relatively intact, i.e., indigenous, even though the Chatino have incorporated introduced plants along with their hot-cold, wind and blood, designations. By this

reasoning, mestizo medicine would have retained wind, envy, anger (*bilis*), as well as hot and cold, but lost the personal associations with those concepts. Neutral may even be a later category, to allow for loss of hot-cold designations, or indeed a Spanish category, as Foster claimed. Chinese medicine has a neutral category whereas Chatino medicine does not. Nor do the Chatino seem to place great importance on hot-cold classification of foods, contrary to observations noted elsewhere for Oaxaca (Mathews 1983, Molony 1975), Mexico (Foster 1994), and Latin America (e.g., Cosminsky 1975, Harwood 1971). Classification of foods and presence of a neutral category are important criteria of Spanish humoral medicine according to Foster. Lack of these two criteria in Chatino medicine only serves to strengthen the case for a native origin of Chatino hot-cold concepts.

Some of Foster's arguments for an exclusively Spanish origin for hot-cold Mesoamerican medical concepts are weak, such as the fact that Spanish speakers have not incorporated indigenous terms for hot, cold or other illnesses. The speaking of native languages was so discouraged by the conquerors, the fact that so many words have found their way into Mexican Spanish is an astounding tribute to the persistence of the native influence on Mexican culture. Certainly, the Chatino use Chatino terms for hot-cold, as do the Tzeltal Maya, and no doubt others.

Guillermo Bonfil Batalla (1996, Spanish edition 1987) has made a powerful and widely acclaimed case for the significant and persistent impact of Mesoamerican indigenous civilizations on present day Mexico. Although he does not focus on medicine, we may extrapolate his argument to that cultural domain.



Similarly, Sandstrom (1989) for the Huastecan Nahua, and Greenberg (1981: 82) for the Chatino, demonstrated the persistence of pre-Columbian religious beliefs. For the above reasons, I find myself in agreement with López Austin (1980), Colson and de Armellada (1983) and Ortiz de Montellano (1990). I conclude that highly personalistic and humoral (an oxymoron in Foster's conceptualization) Chatino concepts of hot and cold are probably of indigenous origin. I venture that mestizos of Tzintzuntzan can probably attribute their current humoral beliefs to indigenous roots that have undergone a process of loss of personalistic elements, with added components of Spanish origin. I might reiterate that I do not doubt the Spanish had an impact on medical beliefs in the New World. Yet, to my mind, Spanish medicine alone cannot account for Chatino hot-cold cosmology and medicine today. Either we are presented with an incredible case of syncretism, encompassing Chatino deities, ritual practice, medicinal plants and symptom classification, or we must consider indigenous origins for some New World humoral concepts.

#### **DIAGNOSTIC CONCEPTS AND MEDICINAL PLANT USE**

Overall, I found an intimate relationship between Chatino diagnostic concepts and medicinal plant use (Chapter 3). I also found that symptoms and etiology are an integral part of diagnosis that is the basis for plant use (Chapter 5). Ethnobotanical literature specifies plant use by isolated symptoms, and, with few exceptions, does not paint a broader clinical picture related to plant use (Etkin 1988b, Heinrich 1994). Direct observation of patients enabled me to ascertain the illnesses that plants were actually being used to treat. Recording case histories as

a part of the ethnobotanical data (Croom 1983) contributes to such a store of knowledge in Mexico (Chapter 3, Chapter 6). This work contributes to a base of physiological (symptomatology) information for Mesoamerican illness (e.g., Maffi 1994, Berlin and Berlin 1994, Rubel et al. 1984, Aguilar Castro 1992). The interpretation of symptoms of individuals and of therapeutic responses to illness is essential for ethnological research to be meaningful to practitioners (Good & Good 1980).

### **Elucidation of Diagnostic Concepts**

My in-depth study of Chatino diagnostic concepts clarifies many of these concepts. For example, my description of *espanto* sheds light on the difficulty other researchers have encountered in characterizing that illness domain (e.g., Rubel et al. 1984, Fabrega 1988). Browner et al. (1988) summarize *espanto* (*susto*) as having “a broad range of symptoms, especially tiredness, lack of appetite, weight loss, debility, lack of motivation.” *Espanto*, according to the Chatino, has many sub-categories with diverse and distinct symptoms, such as *muina* (anger), heat, cold and wind, that can be differentially diagnosed (Chapter 3). In a sense, to say one has *espanto* is to say one is sick. In Fig. 3.1 *espanto* overlaps with *aire*, heat, cold, *muina*, and *chaneque*. I considered another representation, with *espanto* encompassing all the illness categories, but then opted for the more conservative picture. (*Mallugón*, for example, is not *espanto*.) *Espanto* as a broad designation for illness is also consistent with Rubel et al.'s (1984: 120) findings that “*susto* greatly increases the probability of grievous deterioration in health, and eventual death” (morbidity and mortality).

## **Wide Range of Diagnostic Concepts**

The medical concepts of hot and cold have been considered to be the central theme of humoral medicine in Latin America (e.g., Colson & De Armellada 1983, Currier 1966, Foster 1978, Ingham 1970, Messer 1987). These concepts are prevalent in Chatino (Greenberg 1981: 99), Zapotec (Messer 1978: 65-66), and Chinantec (Browner 1985a, b) medicine. Some investigators believe hot and cold in Latin America have been overemphasized. For example, in a Chinantec community in Oaxaca, "blood" is an important criterion for the selection of herbal remedies in connection with women's health (Browner 1985a, b). In his work with the Purépecha (Tarascans) in Michoacán, Young (1981) found that hot and cold were not major factors in decisions regarding the type of treatment sought. In a study of the consistency of views on hot and cold among the lay and folk healer sectors of a Guatemalan community, Tedlock (1987) found that hot-cold concepts were only employed by lay persons and folk healers when self-prescribing in cases when there was doubt as to the appropriate remedy. In their practices, healers used remedies on an empirical basis.

In my study of Chatino medicine, while hot and cold were central concepts, certainly not all medicinal plants nor all illnesses were categorized by their hot and cold properties. Wind (*aire*), *latido*, anger (*muina*), fright (*espanto*), blood (including *mallugón*), and *fuera* were all important illness concepts with corresponding medicinal plants. Prior work in Mesoamerica has tended to emphasize the naturalistic aspects of heat and cold, while Chatino beliefs suggest

that an integrative approach to medicine more closely reflects their beliefs (Chapter 5).

### **Plant Chemistry and Diagnostic Concepts**

Medicinal plants are often classified by such qualities as taste and smell, by the organs they effect, and by other characteristics, such as their habitat, color, and shape (e.g., Messer 1978, Tierra 1988: 32-44). Several works correlate phytochemical and pharmacological properties with medical categories used to classify herbs (Hobbs 1988, Messer 1991, Ortiz de Montellano 1975, Ortiz de Montellano & Browner 1985a, b). Hobbs (1988) relates pharmacological effects of phytochemicals contained in medicinal plants to the traditional tastes and colors that also have particular ethnomedical therapeutic actions associated with them. Messer (1991) and Ortiz de Montellano and Browner (1985a, b) present detailed traditional medical and Western medical explanations for the appropriateness of remedies for specific illness categories. The desired native medical therapeutic effect of herbs must be considered when determining efficacy in the Western medical sense (Ortiz de Montellano 1975). For example, plants that contain phytochemicals that induce nosebleed, the Aztec cure for headache, would be considered efficacious using ethnomedical criteria (Ortiz de Montellano 1986).

There is a growing interest in the classification of local herbs in accordance with traditional medical categories and humoral principles, and in the substitution of local herbs for exotic foreign herbs among herbal practitioners in the West. For example, Frawley and Lad (1986), Holmes (1989) and Tierra (1989)

approached the hot-cold classification of North American medicinal plants utilizing literary sources (citations are not referenced in the text in any of these works), intuition, organoleptic properties of the herbs and their own experience as practitioners. As a practitioner, I was also interested in the possibility of finding cross-cultural herbal equivalents for similar syndromes (Chapter 1). Assuming the remedies used are efficacious, systematic comparison of symptoms and syndromes for which plants are used across cultures is one way to assess equivalence (Chapters 3, 4, 6). Following Ortiz de Montellano (1975, 1986), Ortiz de Montellano and Browner (1985), and Browner et al. (1988), I took a second, more deductive approach to this question, employing cluster analysis to examine the relationship between plant chemistry and the diagnostic concepts that determine use (Chapter 7).

Statistical analysis of broad chemical classes corresponding to plant use reflected the salient Chinantec diagnostic concepts (Chapter 7) and supported the field observations for the Chatino regarding the main illness categories. Patterns of broad chemical classes corresponded to specific traditional functions (uses). The analytical method presented in Chapter 7 allows for systematic examination of the relationship between plant chemistry and plant use and the results should be predictive for plants with analogous uses across cultures.

### **Efficacy**

The search for the *same* herbal remedies used by two distinct cultures as an indication of probable efficacy has been accepted ethnobotanical methodology (Bye 1986, Croom 1983). For instance, Bye (1986) has compared uses of the

same plants in two societies with distinct medical conceptual frameworks, the Tarahumara and urban Mexican mestizo culture.

Browner and Ortiz de Montellano (1985) have proposed a good method for ranking medicinal plants for possible efficacy using available chemical and pharmacological data. They recommend four levels of ranking of confidence, level one being the lowest, for which only cultural use data is available, level two, the next level of confidence, when chemical data suggest the effect for which the plant is used, level three is when both chemical data are available and pharmacological studies show biological activity, and the fourth and highest level of confidence is when the plant has been tested in double-blind clinical trials. A limitation of their approach is that an efficacious plant may not have been subjected to chemical evaluation or pharmacological testing. Use of a medicinal plant should therefore continue, even if the plant's efficacy cannot be evaluated. Determination of efficacy based on their method seems most useful to those interested in the "ethnobotanical approach to drug discovery" (Cox and Balick 1994) but holds less promise of utility by people who use plants as medicine (cf., Waller 1993).

One conclusion of my study is that efficacy is probably more readily assessed in terms of therapeutic outcome rather than by any measure of the plants themselves (cf., Chapter 7, also Akerele 1987, 1990, Byron Good's comment in Browner et al. 1988, Etkin 1988a, de Smet 1993, Farnsworth 1980). Therapeutic outcome can be evaluated by interview and physical examination, much as it has been by the people themselves. Determination of efficacy has proceeded in an unsystematized and undocumented, but by no means ineffectual, fashion for

millenia (e.g., Balick and Cox 1994). This conclusion is relevant to determination of funding priorities for world health, for research and for public health efforts. People can be empowered locally to assess efficacy. One excellent example of such an effort is the training of health promoters in indigenous communities in Mexico to check for presence of intestinal parasites after administration of *Chenopodium ambrosioides* tincture (Ysunza Ogazón et al. 1992a: 192, 1992b). Keeping symptom logs might be another consistent and reliable method for evaluating efficacy.

## **COMPARATIVE MEDICINE**

### **Method in Comparative Medicine**

There is a recognized need for more comparative ethnobotanical research to establish commonalities between medicines across cultures (Akerele 1990). Cross-cultural studies of medicine are valuable for the understanding to be gained as to how humans perceive and cope with health, illness, the body, symptoms, etiologies, and treatment modalities, including plant use, aspects of which are comparable and “universal,” and others of which are culture specific. One problem in past efforts to characterize medicine has been the creation of categories that emphasize the dichotomy between Western and traditional medicine (Kleinman 1978), but fail to adequately account for differences between traditional medicines (Press 1980). Still, cross-cultural medical studies have primarily focused on Western medicine (Browner et al. 1988) as the external (etic) unit of comparison. Chinese medicine provided a useful reference point for understanding of New World medical theory (Chapters 4, 6). Chinese medicine

shares characteristics with Western medicine, as well as with other traditional medical systems (Unschuld 1987, Young 1983, Foster and Anderson 1978: 51-79 *passim*). In my comparative discussion of Chinese and Chatino (Chinantec and Zapotec) medicine (Chapter 6), the Chinese viewpoint is external (*etic*) with regard to Chatino medicine and vice versa---perhaps we could call this an *inter-emic* dialogue.

According to Browner et al. (1988), "Efforts to build paradigms with which to compare medical systems... have foundered on strictures against wrenching of ethnographic materials from the cultural contexts in which they were produced." My integrative approach (Chapter 5) is useful for comparing medicine cross-culturally. The integrative approach to medicine I propose (Chapter 5) addresses the problem of classifying medicines by discrete uncomparable groupings. As many authors recognize, no medicine is culture-free, yet cross-cultural comparison is still possible, Western medicine notwithstanding. Chapter 6 is a deliberate and careful (although not exhaustive) accounting of differences and similarities between two traditional medicines that illustrates how direct comparisons of medical concepts are possible between cultures, as Browner et al. (1988) proposed. In fact, by retaining the cultural context we can actually facilitate comparison. One criticism leveled at Browner et al. (1988) pertained to their choice of Western medicine for comparison. My work demonstrates that their approach has broad applicability to a wide range of syndromes and cultures, even plants, with the potential for enriching the medicines in question (see "Cross-cultural Exchanges" below.)



In relation to the universality of the human body, its functions and symptoms, in health and dis-ease, I am reminded of conversations with my toddler on animal sounds. In Hebrew the rooster crows "kukuriku," in English "cockadoodledoo," in Korean the horse winnies, "hee hee hee hin," and in English "neigh," yet each animal speaks the same language. So it is with our human body, and the experience of illness. We all share the same bodily processes and the gamut of possible dysfunction, yet cultural description, categorization and attribution of importance to any given illness manifestation can vary. Browner et al. (1988) write, "By now, medical anthropology has moved beyond the need to prove that human biology and culture are tightly intertwined. We therefore propose that the logical next step is to show how and when diverse cultures respond to this biological substrate." My thesis, describing the relationship between diagnostic concepts and medicinal plant use, among the Chatino (Chapter 3, Chapter 5), and cross-culturally (Chapters 4, 6, 7) is such a step.

### **Cross-Cultural Exchanges**

Historically, information on illness conceptualization and medicinal plant use has flowed freely between cultures (e.g., Foster 1994, Prance and Plana 1996). My work facilitates that ongoing process of knowledge exchange. I offer some ideas for ways in which cross-cultural exchange might benefit and strengthen Chatino, Chinese and Western medical practice based on my findings.

A major difference exists between Chatino and Chinese administration of medicinal plants (Chapter 6). The Chatino tend to report mild alleviation of

symptoms after one to three days of medicinal plant use. Treatment is sporadic, often short-lived, rarely exceeding two weeks, and plants are often used singly. In contrast, the Chinese use decoctions of many plants taken over long periods of time (several months or longer for chronic ailments). The Chatino are familiar with the potency of the fresh plant material they employ. Experimentation with longer treatment protocols may lead to resolution of chronic problems, beyond providing only temporary relief. Use of combinations of plants may be another way to enhance the effects of treatment. (For additional suggestions, see "Efficacy" and "Diagnostic Concepts, Medicinal Plant Use, and Empowerment," above.)

An increased understanding of traditional medicine may benefit Western medical illness paradigms. For example, *latido*, a pulsing abdominal pain, constriction or mass that is of foremost concern to the Chatino, is a palpable sign as well as a reportable symptom that may be undervalued as a useful diagnostic feature in Western medicine. Detection of *latido* might facilitate diagnosis of gallbladder disease (Berlin and Jara 1993).

Although a pulsing painful abdomen is already a minor part of Chinese medicine, Chinese practitioners might consider placing greater emphasis on abdominal palpation in their practices. Chatino differential diagnosis of *latido* (1. *muina* and heat, 2. debility, 3. cold) can readily inform Chinese medical practice. As mentioned above, some Chinese and Ayurvedic practitioners in Western countries are already using herbal equivalents as substitutes for imported pharmacopeias. A systematic study of analogous symptoms and illness categories for which plants are used seems a practical approach to determining equivalence.

Symptoms and diagnostic concepts associated with plant use can guide ethnopharmacological research. For example, instead of evaluating plants for infertility alone, plants of a particular sub-type, for heat or cold, may share some common pharmacological properties. Chemical and pharmacological studies can contribute to a determination of efficacy (e.g., Waller 1993, Etkin 1988, Ortiz de Montellano 1986, Browner and Ortiz de Montellano 1985, see "Efficacy," above). By taking the diagnostic concepts which are the basis for plant use into account, ethnopharmacological research can be better oriented to serve the people who use the plants as medicine (cf., Waller 1993).

A significant conclusion from my work is that disparate cultures have plants that address nosologically similar illnesses. One possible application of this finding is that the Chinese and Western medical hegemonic practice of importing remedies from afar may not be all that necessary. Remedies for most ills are available locally. Their continued use needs to be encouraged and, where possible, improved upon. This realization is less relevant to economically advantaged societies, who can afford exotic plants and expensive pharmaceuticals. Recognizing the capacity of the local flora to address local health needs, at least in terms of the range of illnesses covered if not the therapeutic efficacy of the treatments, is relevant to the 80% of the world's population who rely on the local flora for medicine (Bodeker 1996).

#### **CONTRIBUTIONS TO MEXICO**

Work in the Sierra Sur provides the Flora of Oaxaca project with needed floristic data and adds to basic knowledge of traditional medicine in Oaxaca. The

project contributes to a vegetation inventory for determining priority areas for conservation and to the general public outreach program of Sociedad Para el Estudio de Los Recursos Bioticos de Oaxaca (SERBO), an information center for ethnobotany, ecology, and conservation in Oaxaca (Martin and de Avila B. 1990). Plants of potential economic value may be identified as possible sustainable resources to benefit the community. Mexico is interested in increasing cooperation between traditional healers and the national health system, and in incorporating traditional remedies into the standard pharmacopeia. My work contributes to these national goals. Hopefully, this written work serves to support and encourage the Chatino in the continued practice of their traditional medicine, the preservation of their knowledge of their natural world, which is their legacy, and in the conservation of their natural resources.

A main goal of ethnomedical and ethnobotanical research needs to be towards enhancing medical practice locally, including diagnosis and appropriate herbal use (Waller 1993). A clear view of the medical landscape, so to speak, can serve as a point of departure for the Chatino, and possibly other Mesoamerican groups, to assess and refine their own beliefs and practices. Clarification of common names and plant identification can facilitate accurate transmission of information regarding use. A simplified text containing illustrations of the plants and Chatino uses is one expected product of this research that will serve the Chatino directly. Information regarding plant use varies from village to village and sometimes even from family to family. A published work incorporating the uses and practices of many will likely stimulate much interest and lively discussion among the Chatino. As Tío Justino (Chapter 2) said, when shown a

sample of what the final product might look like, “My children will learn a lot with this.”

## Appendix A: Useful Plants of Santa Cruz Zenzontepec

Plants are listed by family. Numbers in parentheses refer to voucher specimens. Unidentified plants are listed by collection number within families.

### ACANTHACEAE

*Tetramerium* sp. (possibly a new species, close to *T. nervosum*, #106, #325)  
*hierba de hemorragia*, boiled as tea for *hemorragia*, abnormal uterine bleeding, *menorrhagia*.

*Elytraria imbricata* (#311, #195, #332) *quelite de pajarito*, *quelite de paloma*, edible green eaten in soup.

### AESCLEPIADACEAE

*Matelea* sp. (#316), *cabeza del perro*, vine, fruit eaten.

### AGAVACEAE

*Agave angustifolia* (#607), *maguey*, *espina de maguey*, **choo**, leaf tip boiled as a tea for cough, cultivated as cash crop for *ixtle* (fiber).

*Agave potatorum* (#521), *maguellito de tobalá*, *maguey de tobalá*, **kyiote**, leaf and stem used, considered warming, 1. "the leaf is roasted and the juice, the foam, that comes out, is squeezed into a jar, or squeezed [out] and placed in the night dew and drunk daily, for about 20 days, for *pasma*, cough;" 2. used in hot post-partum bath, from the waist down, "a piece of the trunk of *maguey de tobalá*," with tips of *carrizo* (*Arundo donax*), laurel (*Litsea glaucescens*), *hojas de naranja* (orange leaves) "when the women still have pain after giving birth, from the cold;" 3. for bruises (*golpes*), the leaves are boiled and drunk "for bruises and cough, when one's neck has been injured."

*Agave* sp. (#570), *maguey de espadilla*, **choo kyishe'**, the stem is cut and used as a stopper for *Lagenaria siceraria* gourds.

### AMARANTHACEAE

*Amaranthus spinosus* (#217, #241), *espina quintonil*, *quintonil de espina*, allowed in garden, aerial parts used externally, "with purple onion, beef lard, *copal*,

the three are fried together, applied and tied to the affected part, for *piojonillo*, *piojillo*, which is like *clavillo*, a pocket of pus under the skin that can come out from both ends, nowadays you don't see this anymore;" also burro fodder.

#### ANACARDIACEAE

(#363), *copalillo*, *copal.*, compare *Bursera bipinnata*, Burseraceae. Some say this plant's resin is not used as copal.

(#907), *tatatil*, **yandase'**, latex used, causes dermatitis, for cuts and abrasions, "apply this latex mixed together with the blood, and one gradually gets better, within six to eight days, [the cut] heals well, without infection, [the latex forms] a scab," latex applied to cut makes a permanent skin colored scar tattoo, latex of *tatatil* used to remove chiggers, applied directly to the chigger bite, the latex burns, then dries the chigger, thereby healing the affected area.

*Mangifera indica* (#120), *mango*, leaf boiled as tea, with cinnamon, for cough (four leaves in a half litre of water, with one teaspoon of cinnamon), non-native.

#### ANNONACEAE

*Annona* cf. *reticulata* var. *primigenia* (#210, #220, #249), *anona*, *anonal*, *chirimoya*, **yannjduluaa**, cultivated in home gardens, leaf used externally, considered cooling and green, the whole fresh leaf is tied to the forehead for headache, or smeared with beef lard, passed through pine smoke until it turns black, applied hot and tied to the affected part for sprains, fractures; fruit sweet edible, "opens like a vagina, **uaa**, **suaa**," hence its name.

#### APIACEAE

*Eryngium bonplandii* (#579), *hierba de chaneque*, root fragrant, mashed with water and drunk, the remaining bolus applied externally to the painful area, 4-5 one inch pieces, 3-4 consecutive mornings before eating, for *chaneque*.

*Eryngium globosum* (#527, #544, #1029), *remedio de San Pedro*, *maguay de espanto*, root is boiled or mashed fresh in water and taken internally "for dysentery, diarrhea, stomach ache," "for diarrhea when it is very capricious and doesn't go away;" the root is mashed and boiled, and the water used to bathe for "any fright."

#### APOCYNACEAE

*Haplophyton cimidum* (#330), *hierba de cucaracha*, toxic, insecticidal, root mashed with corn meal to kill cockroaches.

*Nerium oleander* (#606), *flor de lagrel*, "for the saints," as church offering.

*Stemmadenia* cf. *donnell-smithii* (#876), *palo de leche*, **keta lukön**, leaf eaten as quelite with beans, wood used for slingshots.

*Stemmadenia tomentosa* (#352), *xikië buru* (burro's balls), leaf eaten as quelite, "in soup, like *verdolaga*."

*Thevetia ovata* (#350), *venenillo*, the bark is cut, heated over coals and applied externally for sprains; the fruits are used for dancers' leg rattles.

#### ARACEAE

*Xanthosoma robustum* (#139), *huichicata*, *taragundín*, **laka'tö'**, leaf used, in streams, also cultivated as an ornamental, external use, "to wrap other herbs [in a poultice] like *quelite de conejo*, to lower fever," the leaf is cooked after the veins have been carefully removed (fingernails must not rupture the veins) and rolled in a fresh tortilla to form a ball, eaten for red dysentery, diarrhea.

#### ARISTOLOCHIACEAE

*Aristolochia variifolia* (#632) *bejuco de las gallinitas*, *guaco*, flowers used as chickens in children's games, root of *guaco* is used medicinally for *aire*.

#### ASTERACEAE

(#189), *hierba de lagarto*, **miyu'** (cat, *gato*), whole plant boiled for external use, to bathe newborns.

(#313), *coleta*, root eaten.

(#332), *quelite de tacuate*, edible green found along cornfields, external medicinal use, "mashed and applied to the *tumor* (growth), to remove small warts."

*Acmella radicans* (#528), **kíee menëë'**, the cut stem is applied fresh to decayed teeth.

*Acourtia bravohollisiana* (#560), *hierba de brujo*, *hierba de sueño*, root used to cure witchcraft (*maldad*) "crushed and drunk in the mornings on an empty stomach (*en ayunas*), when one dreams of being bitten by a rabid dog, of a dead person, or of eating meat, three to four [consecutive] mornings, one handful, pounded on a rock with another rock to extract the juice."



*Acourtia reticulata* (#557), *algodoncito*, the cotton-like root is used for diaper rash, ground to a powder and applied with lard.

*Ageratina tomentella* (#163, #487, #547), *cuanasana*, *mocoxiana*, *buenasana*, **yangyu loki**, **yankyu loki**, leaf used alone as tea or in combination with *cuachalalá* "with a little alcohol, cooked in water and a stream of alcohol added while still hot," considered very hot and bitter, to speed childbirth, to expel the placenta, to stop uterine bleeding (*hemorragia*) due to witchcraft, "as a bath from the waist down, with tips (*puntitos*) of *carrizo* (*Arundo donax*, Poaceae), *laurel* (*Litsea glaucescens*, Lauraceae), leaves of *naranja* (orange, *Citrus sinensis*, Rutaceae) and a piece of the trunk of *maguey de tobalá* (*Agave potatorum*, Agavaceae), for women with postpartum pain because of the cold," considered warming.

*Artemisia mexicana* (#594), *maestrita*, *hierba maestra*, *estafiate*, leaves used as tea for *muina*, or external use, the leaves are passed through pine smoke and moistened with alcohol to make a plug for earache, considered bitter and hot.

*Baccharis* cf. *salicifolia* (#477, #587), *chamiso*, *chamiso de cohetes*, cultivated in garden, "for *latido*, when one is flooded with *bilis* (*regado de la bilis*), mashed well with *verbena*, *valeriana*---*crucisita*---*valeriana* is the true name, when one feels weak, the body has no strength (*fuerza*), one feels drunk, dizzy, one makes a ball [poultice] with a loose cloth and applies it to the umbilicus."

*Bidens odorata* (#107, #593), *aceitillo*, *pastorcita*, *raíz de aceitillo*, **kuitse'**, **kuiyi**, root used, "basca, vómito," "cuando uno come y está feo, malo, simple," sed."

*Bidens pilosa* (#537), *aceitillo*, weeded to allow maize germination but tolerated later on, for fever, considered cooling.

*Bidens squamosa* (#493, #614), *hierba de calor*, whole plant used fresh for fever.

*Calea ternifolia* var. *ternifolia* (#514, #566), *hierba de ventiadura*, cultivated in garden, for *ventiadura*, *cuerda*.

*Calea urticifolia* (#142, #202, #540), *hwaretero*, *barretero*, **kyishe tlä'ä** (*hierba amarga*), **kyishe jlyä**, leaf used fresh, externally and internally, externally in a poultice applied to the umbilicus with mezcal, for *latido*, *muina*, cough, or mashed fresh and drunk, once or three consecutive mornings, considered bitter and cooling, "hay dos clases (there are two kinds)."

*Chaptalia nutans* (#298), root used, boiled as a tea for cough.

*Cirsium subcorianum* (#900, #1047), *cardo santo*, **kitse' kualo**, **kitse' nga'a**, **kie nga'a**, "the cooked root [as tea] for pure white dysentery from cold, and a little of the mashed root drunk fresh for red dysentery from heat [that is] pure blood."

*Dahlia coccinea* (#368), *corneta*, *bravohollisiana*, tuber eaten fresh, "The Chatinos say one can't play with that flower because you will *mal de ojo* (conjunctivitis)."

*Dyssodia glandulosa* (#558, #568), *compañero de la milpa*, root and leaves used, María (the Virgin) chewed root for toothache, leaves eaten when young.

*Elephantopus spicatus* (#122, #481, #548), *lengua de perro*, *diente del perro*, **kitse ndea jñé'**, the fresh root is mashed in water, hot coals are added to the water, and the preparation is strained and drunk warm, for vomiting, diarrhea, dysentery, diarrhea from vergüenza. May be taken alone or in combination with leaves of *guayaba de costoche*, *hierba buena montéz*, charcoal (a small piece of burnt tortilla), a piece of house mud, clay from a wasp's nest, *hierba buena*, seven items in all, prepared as above.

*Eupatorium (Chromolaena) odorata* (#534), *crucisita*, *hierba de cruz*, *valeriana*, **yate'he crusí**, the leaves are crushed fresh in water and drunk for *latido*. the flavor is bitter.

*Eupatorium (Fleischmannia) pycnocephalum* (#77, #129, #141, #276, #567). *quelite de conejo*, *hierba de calor*, **kyeta kuichi**, leaf used, external use, for fever, *latido*, considered cooling, "with young leaf tips of *limón*, *lima de chicha* (*Citrus* spp., Rutaceae), *tronadora* (*Tecoma stans*, Bignoniaceae), crushed in the hand or finely cut with scissors, placed on the stomach, back, forehead, and feet, sprinkled with *mezcal*, lemon juice or water and tied with *huichicate* (*Xanthosoma robustum*, Araceae) or 'white' *higuerilla* (*Ricinus communis*, Euphorbiaceae) leaf."

*Gnaphalium (Pseudognaphalium) attenuatum* (#511, #543, #1025), *gordolobo*. boiled as tea for cough, "three small 'branches' to one cup of water." considered cooling.

*Gnaphalium viscosum* (#574), *gordolobo*, use as for *G. attenuatum*.

*Guardiola tulocarpus* (#596), *chamiso de loma*, *chamiso del cerro*, use as for *chamiso blanco*: "a piece in *mezcal* for persistent fever (*calentura cervadura*), applied to the feet several times until the fever subsides."

*Iostephane trilobata* (#516, #553), *camoreal morado*, *manzo*, root used as tea for uterine bleeding (*hemorragia*), *ventiadura* and *cuerda*.

*Melampodium divaricatum* (#213, #865), *acahual*, *acahualillo*, **kie miche**, **kie' mīchyē'**, flower used at the *novena*, powdered for pigment "to paint the cross on the ground," also animal fodder, for burros, goats and pigs.

*Montanoa xanthiifolia* (#585), *canelilla*, cultivated, leaves boiled as tea for back pain.

*Pluchea odorata* (#591), *chocolatillo*, for *latido*, use same as *Hyptis verticillata* (Lamiaceae).

*Pluchea salicifolia* (#150), *luís perez*, resinous leaf used externally, boiled as bath with *tepozán* (#82, unidentified), *garañona* (*Croton ciliatoglandulifer*, Euphorbiaceae), *casahuate* (*Ipomea murucoides*, Convolvulaceae), *chibarobo* (*Lantana* sp., Verbenaceae), for swelling (*hinchazón*).

*Porophyllum macrocephalum* (#162, #209, #536), *papanoquelite*, leaf used, wild and cultivated quelite, eaten raw as accompaniment to meal, latex medicinal, applied to "little tumors and warts."

*Psacalium* sp. (#501), *camoreal*, "the tuber is used as a poultice (*parche*), ground and applied as a cake (*torta*), wrapped with *camoreal morado* (*Iostephane triolobata*), also ground and drunk fresh for body pain, for bruises, taken several times, depending on the duration of the affliction (*que tiene uno jodido*), up to ten or fifteen days, good for scrapes."

*Stevia connata* (#552, #573, #848, #1019, #168), *hierba de muina*, *hierba de latido*, root used, mashed with water and drunk three to four mornings on an empty stomach (*en ayunas*) or boiled as tea, for *latido*, *muina*, *coraje* (anger), when the mouth is bitter from *muina*; also "for the saints" (*para santo*), used as substitute for *flor de cempasúchil*, on cemetery floral arches with *Brugmansia candida* flowers, *Clematis* fruits; considered astringent (*estítico*).

*Stevia lucida* var. *oaxacana* (#909), *toronjil*, **yakalaka'nga'á**, "ripe reddish-brown fruits eaten, [inedible] hard seeds inside."

*Stevia ovata* (#946, #168), *hierba de muina*, *hierba de latido*, use same as for *S. connata*.

*Tagetes filifolia* (#535), *hierba anís*, for broom and as spice for baked bread.

*Tanacetum parthenium* (#145, #180), *santa maría*, cultivated medicinal, whole plant used, boiled as a tea, for "stomach ache" (a common referent to lower abdominal pain), abdominal pain, female infertility, during difficult childbirth to speed labor, menstrual pain, considered warming. Also sold in *fiesta patrón* (major fiesta) markets by Mixtecos.

*Tithonia diversifolia* (#349, #851), *acahual amargo*, **kula' tana**, boiled for external use as bath, "newborns are bathed their first day so that they don't get a rash (*granos*)."

*Tridax mexicana* (#904), spice for *pipiyán* (ground squash seed paste).

*Viguiera dentata* (#510), *flor macho de Todos Santos*, as substitute for *Todo Santos flower* (*cempasúchil*, *Tagetes erecta*) when not available.

*Zinnia peruviana* (#371), *malacate*, **kie' ndyavi** (*flor preciosa o bonita*), "in the Month of Flowers (September), when there start to be flowers, [the flower] dries and remains the same, it doesn't lose its color, **kie' ndyavi**, precious flower of colors. When a child is light-skinned they say **ndyavi**."

#### BALSAMINIACEAE

*Impatiens* sp. (#233), *rosa china*, *calendula*, cultivated ornamental, red variety, boiled for external bathing of burns and *cáncer* (infection. *cangrena*).

#### BASELLACEAE

(#492), *suelda con suelda*, mashed root applied to sprains.

#### BEGONIACEAE

*Begonia* sp. (#874), *coyul ágrio*, **unkyuiye**, "chewed raw to relieve thirst."

#### BIGNONIACEAE

*Pithecoctenium echinatum* (#169), *cuchara*, *bejuco de cuchara*, *cucharadita*, *bejuco de peina de tlacuache*, **luti kekula'** (*bejuco de peina de tlacuache*), seed, leaf and stem used, the leaf is used externally: "the seed is applied with oil (*aceite rosado*) for headache;" "the leaf is mashed and applied to the forehead and wrapped with a cloth;" used for children's games: "we take out the seeds and say we are selling clothes," vine used for construction, considered cooling.

*Parmentera aculeata* (#633), *cuajilote*, fruit boiled as tea for cough.

*Tecoma stans* (#90, #140, #187, #571), *tronadora*, **ya kie ki'e'**, (**kyishe shkulu**, Tataltepec Chatino), shoot tips and young leaves used externally alone or 1. "with *quelite de conejo* (*Eupatorium* (*Fleischmannia*) *pycnocephalum*, Asteraceae), shoot tips of *limón* and *lima de chicha* (*Citrus* spp., Rutaceae) as a poultice, cut into fine pieces, sprinkled [lit. blown. *sopla*] with mezcal or lemon juice, wrapped on the stomach, head, back and feet with *huichicata* (*Xanthosoma robustum*, Araceae); 2. "with *higuerilla blanca*

(*Ricinus communis*, Euphorbiaceae), cut into fine pieces, placed on the feet and the right side of the body over the liver, sprinkled with mezcal or lemon juice if there is no mezcal, and wrapped. The leaves are left on until they turn black, dry, yellow, 'they get burned.' One sweats a lot and the fever comes out." 4. "applied to the stomach [umbilicus] with *mezcal* and wrapped for *latido*," internal use: "the plant is mashed with water and drunk fresh for *latido*;" 5. "the flower is boiled as a tea for whooping cough," 6. "I read that it's used for diabetes;" edible almond-smelling stink bugs found on plant, considered cooling, bitter.

#### BIXACAEAE

*Bixa orellana* (#994, #1017), *chontle*, bark used, for edema, swelling (*hinchazón*). In Tataltepec the branches are used as fire starter.

#### BOMBACACEAE

*Ceiba aesculifolia* (#152, #278, #641), *pochotle*, *camote de pochotle*, *ya ndzu'ku'*, *ndzuku'*, seed fiber used as filling for pillows, young white root parenchyma eaten after peeling away root bark, seed ground and cooked as porridge.

#### BORAGINACEAE

(#482), *lengua de vaca*, for child's umbilical hernia, "when [the affected area] is loose (*relaja*) the pulp (*tripita*) of *tecomachiche* (a bitter gourd, Cucurbitaceae), is mixed with almond oil and a small ball of beef lard (about 0.5 the length of the little finger) in a pot, the whole pulp is added at once (*se hecha la masita en un trago*), fried, put on a leaf of *lengua de vaca* and applied by rubbing and burning [the skin] where it's loose (*relajado*), where there's pain, for the pain, three times, that's how I cured my son."

*Cordia* sp. (#231), whole plant used as a broom, especially for sweeping bread baking ovens.

*Tournefortia* cf. *densiflora* (#91, #1060), *hierba cangrena*, *hierba de cancer*, *hierba negro*, *kitsë' ndzukua' jlyä*, leaf used externally for *cáncer*, *cangrena* (infection), boiled for bath "with a piece of *canfor* after childbirth," "for infections and postpartum pain, five leaves in a tea, 2-3 times a day," boiled as tea for abdominal pain "when there is infection inside," the boiled water turns black hence one of its names, leaf dried and fine powder applied directly to wounds.

*Tournefortia cf. glabra* (#104, #176, #360), *hierba de gordura*, *hierba de jabón* used as soap for washing dishes.

#### BROMELIACEAE

(#119), *flor de maguelltito*, leaf used, "green for the saints."

*Tillandsia* sp. (#850), *eno*, *pastle*, for "blood circulation," used as Christmas decoration during Noche Buena and La Posada.

#### BURSERACEAE

*Bursera bipinnata* (#491, #952, *Bursera* sp. #144), *copal*, *copalillo*, *yayana*, resin used, burned for abnormal uterine bleeding, menorrhagia (*hemorragia*), the woman sits over the smoke "which goes directly up to the uterus," "for the saints," to make paint.

#### CAPRIFOLIACEAE

*Sambucus mexicana* (#562), *sauco*, root used boiled as a bath for fever, or as a tea when "the stomach is distended (*esponjado*) and constipation (*no se puede hacer baño*)," or a small piece is mashed fresh with water for *empacho* as a purge.

#### CHENOPODIACEAE

*Chenopodium ambrosoides* (#243), *epazote*, root and leaf used as tea or tincture, cultivated edible and medicinal for intestinal parasites, mainly worms: also animal, especially burro, fodder.

#### CHLORANTHACEAE

*Hedyosmum mexicanum*, Cordemoy (#586, #990), *tabardillo*, *palo de agua*, the leaves are placed under the *petate* for fever, considered cooling.

#### COCHLOSPERMACEAE

*Cochlospermum vitifolium* (#259, #634, #715), *cojón de toro*, *yakiaka*, inner bark used internally and externally, boiled as tea and external wash for poisonous stings (*ponzoña*), multiple beestings, for swelling (*hinchazón*), bark boiled as tea for diabetes, the bark is chewed for snake bite, the bark is heated and applied to the affected area for sprains; the flowers are soaked in chicken's water trough for the chickens to drink "when the chicken's head turns black and the chicken gets drunk and sleeps on the

ground (*carbonosa*, bulls also get that)," the bark is substituted when flowers are not available.

#### COMBRETACEAE

*Terminalia catappa* (#287), *almendra de cedrón*, fruit and seed used, external use: "with *ruda* (*Ruta chalapensis*, Rutaceae), *yukundo* (#183 unidentified), *guaco* (*Aristolochia variifolia*, Aristolochiaceae), *estrella del mar* (starfish), *gotacoral* (red coral), *paeonia*, for aire, ataques (seizures), a little of each herb is ground, mixed with mezcal, applied to the whole body and drunk, seven herbs," fruit edible, seed sold as almond substitute for making a chocolate beverage.

#### CONVOLVULACEAE

*Ipomoea tricolor* (#154, #294, #533), *santa maría* (hallucinogen), *yedra*, *semillas de la virgen*, **ndjyiaa jo'o**, vine with blue flowers considered hallucinogenic, **lutyi ndjyiaa** has white flowers used as shampoo, , seed used, boiled as tea "to have dreams, to divine witchcraft," "hallucinogenic, to dream and divine the cause of illness, for witchcraft," used as tea to speed childbirth. also as shampoo, "the seeds are ground, used to wash hair, they get the dirt out but don't sud (*no sale espuma*), used also to wash the hair of the dead, 14 seeds for a man, 13 seeds for woman, hair washed by member of same sex."

*Ipomea murucoides* (#500, #532, #1050), *casahuate*, **yalate'**, "for pigs when they get sick and are sad, don't want to eat, the branches are soaked in their drinking water and the water is used to bathe the pigs as well."

#### CUCURBITACEAE

(#523), *tecomechiche*, with *lengua de vaca* (Boraginaceae) for child's umbilical hernia (*hernia de los niños*) (see *lengua de vaca*).

*Lagenaria siceraria* (#589), *bule*, *hoja de bule*, leaf used, for children's fright. (*espanto de niños*) and/or *ojo*, use same as *Brugmansia candida* (Solanaceae).

#### CYPERACEAE

*Scirpus* sp. (#972, #1055), *zoyate*, *tule*, **yutu**, **jakua jne** (4 fingers, refers to width), used to make the *zoyate*, an essential clothing item for women, a woven belt wrapped under a black sash.

#### DIOSCOREACEAE

*Dioscorea* sp. (#858), *camote del monte*, edible tuber.

## EQUISETACEAE

*Equisetum* sp. (#224), *cola de caballo*, *canilillo*, whole plant boiled as tea, "for the kidneys, urine, and low back pain, to speed childbirth, to cleanse the stomach, for headache and insomnia, considered cooling.

## EUPHORBIACEAE

*Acalypha* sp. (#297), *colita de ratón blanca*, whole plant used, for red dysentery, considered white and cooling.

*Acalypha alopecuroides* (#242, #265, #359), *chiche de chivo*, used medicinally.

*Acalypha lovelandii* (#296, #875), *colita de ratón roja*, whole plant used, for diarrhea and white dysentery, considered red and warming.

*Chamaesyce berteriana* (#175, #232, #290), *Chamaesyce hirta* (#898, #899), *golondrina*, **kyishe shyiti' kuku** (*hierba de la herida del niño/bebe*), root and latex used, the latex is used to remove thorns, and applied to children's skin for *granos de la oreja* [scabies behind the ear].

*Croton ciliatoglandulifer* (#83, #84, #222), *garañona*, *garañon*, **kuityi karaño**, leaf used externally and internally, combined with *tepozán*, *casahuate*, *chibarobo*, *luis pérez*, boiled as bath for swelling and edema, swollen feet (see *Pluchea salicifolia*, Asteraceae for Latin names), internally as tea for *malpasa de hambre* with stomach pain, externally for earache.

*Dalembertia triangularis* (#228, #340), *curcionera*, **camote dulce**, **camote de calabaza**, root eaten fresh, "the tuber is sweet and has milk."

*Manihot rhomboidea* subsp. *microcarpa* (#178, #366, #871), *quelite de burro*, *quelite de caballo*, *quelite de caballo de zacate*, *pie del gallo de zacate*, **keta te'yakii'**, cultivated edible quelite, leaf used medicinally, "se muele la masa se pega cuando conchuda [uno] de rayo," "the leaf is thoroughly mashed and cooked as a soup *pitona* (*Lippia alba*, Verbenaceae)."

*Pedilanthus calcaratus* (#85, #173), *cordován*, **yashiti'**, **yaxityi'**, latex used externally and internally, "a small piece is cut and the latex applied to the tumor, three times, for warts and small tumors (*pequeños tumores*, warts);" internally "three drops of the latex and a little water for *empacho* (nausea, lack of appetite, when one doesn't like the food one is eating, when one feels full from eating a lot after having skipped meals). Flowers used as *pollitos* (chicks) in children's games.



*Ricinis communis* (#369, #592), *gría roja*, *higuerilla roja*, latex of the petiole heated over coals and applied into ear by blowing. Ear is then plugged with cotton. Oil is extracted from the seeds and burned as a votive "for the saints." White folk variety considered cooling, and red folk variety considered warming.

FABACEAE (see also Mimosaceae)

(#555), *flor de tejón*, edible flower and seed.

(#590), *zompantle*, flower eaten boiled as soup.

(#901), *palo de zopilote*, *yakelatsu'*, the seed is ground with water and drunk fresh for *latido*.

(#953), *frijol del monte*, *ndaa mintye*, "la flor en mole, con aceite, masa, chile"

(#982), *jícama de sarna*, *ndaa shicana kishee (del monte)*

(#987), *sangre de grado*, red resin in the bark, "se hierva la cascara y se lava las anginas con esa agua, también con agua de sal."

*Abrus* sp. (#226), *bejuco de frijol de chinantlahuahua*, seed ground with water and drunk for animals with "red and black, like the seed," for *ponzoña* (poisonous stings). (Red and black color may suggest warning colors of poisonous animals.)

*Andira inermis* (#321, #636, #947, #1052), *tololote*, *yaka'yu*, In Zenzontepec one or two toxic seeds are mashed and drunk for intestinal worms (smaller dosage for children), one mashed seed may be prepared with *atole de maíz*; trunk serves as the central house beam. In Tataltepec the young leaves are applied to the stomach as a poultice for *latido*.

*Hymenea courbaril* (#156, #973), *cuapinol*, *yandzúku*, *kyutin ndzuku*, seeds are ground for dysentery, diarrhea, boiled and drunk as tea, or the fruit powder is cooked in water like *atole* and drunk, fruit edible, seed used for pottery making to smooth pot interiors.

*Crotolaria* sp. (#856), *chipil del monte*, *chipil de culebra*, boiled as tea or applied fresh with mezcal to the back, stomach and heat, "when there is heat."

*Dalbergia* sp. (#159, #744), *cacahuanano*, *retama*, *ya taa*, leaf used externally for fever and infection, the fresh leaf is "crushed in the hands and applied to the head (forehead); the leaf is wrapped in a huichicate leaf, sprinkled with mezcal and tied to the sick person's feet; for red swelling (*hinchazón roja*)

*anderisépela*, an infection that comes out in parts, that has a mouth [or opening] and pure pus comes out, an ugly thing, [the leaf] is ground and the bolus applied," considered cooling.

*Eysenhardtia polistachya* (#513), *cuatle*, branches used, "placed in drinking water for dehydration (thirst, *malpasa de sequilla, de sed*), cut into pieces and left to soak in the water, 2-3 slices (*rajitas*) to a liter of water, [taken] for the kidneys, when one is left with sand in the kidneys from dehydration (*malpasa de sequilla*), to dissolve these grains of sand one drinks this water, to cleanse the kidneys," tints the water red, considered cooling.

*Indigofera miniata* (#314, #993), *ruda montéz*, "root is mashed and left to soak overnight in cool water; drink in the morning for *muina* and *latido*," also used for dysentery and cough, considered cooling.

*Indigofera* sp. (#364), *cuatle "del cerro"*, son says father confused this with *Eysenhardtia polystachya*, see *Eysenhardtia polystachya*, Fabaceae for preparation, "for kidney, bladder, and gall bladder stones."

*Phaseolus coccineus* (#575), *flor de tejón*, red bean, seeds eaten and flower added to beans while cooking, "*sale espesito*," the flowers thicken the broth.

*Sesbania* sp. (#902), *hormiguillo, yakela' kiee'*, "we decorate the altars with this for the pilgrims on Christmas."

*Zornia* sp. (#512), *hoja cen, hierba de calentura*, whole plant boiled for bath for fever, also boiled as tea for *mal de orín* (urinary tract infection) and constipation.

#### GERANIACEAE

*Geranium* sp. (#502, #554), *camoreal morado, itamoreal*, root eaten fresh for "infection (*infección*) and gastric tumors (*tumores del estómago*)."

#### HYDROPHYLLACEAE

*Hydrolea spinosa* (#89, #306, #551, #914), *hierba de aire, hierba de sueño, hierba de sapo, hierba de espanto, espinillo, kitse' kyuisë*, whole plant used internally as tea and externally as bath, "for swollen or inflamed body or feet, liver or stomach infection, nightmares and fright, and itching," "2-3 branches in a pot for bathing, boiled in the afternoon, then placed in the night dew (*sereno*) and drunk cool in the morning, when one dreams ugly, when one feels heat in the stomach, three times,  $\pm 20$ g/cup (1 plant, about a handful, per cup of water)."

## JUGLANDACEAE

*Juglans mollis* (#561), *nogal*, bark used, bark used to flavor alcoholic beverage for wedding engagements, "[the bark] is boiled in a pot, add sugar and boil, then add [cane] *alcohol* (not *mezcal*), 2-3 days, it gets strong, like wine, [used] to ask for a girl [a wife], to bring to the girl's parents [as a gift]."

## LAMIACEAE

(#158), *hierba ceniza*, *hierba del parto*, *oreganita*, leaf boiled as tea, with *totomoxtle morado* (purple corn husk), taken before birth or during difficult childbirth.

(#853), *hierba de sueño*, for witchcraft, "The plant is rare, there isn't much of it (*es escasa la planta, casi no hay muy bien*). It always grows in the rocks. Three branch tips (*puntitos*) are boiled as a tea. The water turns red. One drinks it in the mornings (*en ayunas*) for three consecutive days."

(#908), used in children's games as *pollitos*, kids suck juice at base of small orange flowers.

*Hyptis suaveolens* (#726, #791, *Hyptis* sp. #256, #355, #479, #483), *tintallo*, *tindeo*, *laka' kyatë* (*hoja que se duerme*) leaves and juice applied fresh between the toes, for eczema athlete's foot, "when the toes begin to itch, when [one's feet] itch from getting wet in the mud, in the water," "a handful" boiled and taken as tea for fever "there's a purple [variety] that's stronger," "numbs pain, because of its name, applied fresh where there is pain;" boiled in sitz baths for hot red dysentery or cold white dysentery. precaution must be taken to avoid exposure to cold after the bath; in sitz baths to remove cold, considered warming.

*Hyptis verticillata* (#148, #270, #299, #365, #478, #542), *chocolatillo del cerro*, *mero chocolatillo*, *moco de guajolote*, *riendita*, *hierba de chapulín*, *ndatë' kuitë'*, shoot tip and young leaf used, a large handful of the fresh plant is "rubbed in the hands, placed in cool water and drunk for *latido* and *muina* "the water becomes purple like chocolate, that's why it's called *chocolatillo*." The same mixture may also be applied to the head for *muina*. A man related that he ate bad oranges and was sick by roadside: "A man said to me, 'Chew this.' I threw up and fell asleep. The pain that I had was relieved." Also taken for abscessed tooth (*se hincha la muela*) from *muina*, considered cooling.

*Ocimum basilicum* (#153), *albahaca*, *kitsëi*, whole plant used, cultivated medicinal, taken internally as tea to lower blood pressure, for whole body

pain, *alferecía* (infantile convulsions), *aire*, *ataques* with foam at the mouth and falling, madness, tinnitus (*zumbido en el oído*), "Has virtue against evil. Placed in a vase on the table for friendship, then many people come to visit. When one has envy or muina one plants a patch of *ruda* (*Ruta chalapensis*, Rutaceae), a patch of *sávila* (*Aloe vera*, Liliaceae), a patch of *albahaca*;" boiled with salt as mouth wash for toothache "a lot, a handful, like this, for toothache," applied to the ear for earache.

*Ocimum micranthum* (#257, #307, #341), *albahaca montez*, *albahaca del monte*, whole plant boiled with salt for toothache, also for earache, use as for *Ocimum basilicum*.

*Ocimum* sp. (#578, #581), *hierba buena montéz*, drunk as tea for diarrhea, with leaves of *guayaba de costoché* (*Psidium guajave*, Myrtaceae), *nanche* (*Byrsonima crassifolia*, Malphigiaceae) bark; 2. for vomiting, "with *hierba buena* (*Mentha x piperita*, Lamiaceae), leaves of *guayaba de costoché*, leaves of *guayaba*, charcoal (a piece of burnt tortilla), a piece of the nest of mud wasps and the root of *lengua del perro* (*Elephantopus spicatus*, Asteraceae). Hot coals are placed in water, seven things in all, the root of *lengua del perro* is mashed and placed in the water, the hot coals are added and [the concoction] drunk hot;" 3. juice applied to the ear for earache; 4. as tea for children with stomach ache; 5. when the throat itches, from going outside from a hot place when it's cold, one drinks [*hierba buena montéz*] in tea, it's [considered] hot, a handful, boiled for a short while."

## LAURACEAE

*Litsea glaucescens* (#133, #489), *laurel*, *hierba dulce*, **kyishē tyishi**, leaf used internally and externally, "sitz baths (*baños de asiento*) with *carrizo* (*Arundo donax*, Poaceae) and orange leaves (*Citrus sinensis*, *hoja de naranja*) for women who have just given birth, three days after childbirth;" as tea for diarrhea, a branch in a cup of water; "as a bath for cold, for cold feet." used as a spice in cooking. considered warming.

*Persea americana* (#100) *aguacate*, *hojas de aguacate*, **laka' lisu**, fruit eaten, the fruit is considered bitter and cold and should not be eaten when one has diarrhea, "eating a lot of *aguacate* causes *rage* (*coraje*), a huge rage, a muina. Eating *aguacate* with cheese is also bad;" leaf boiled as tea, "to cleanse the abdomen after childbirth, a handful to a cup of water, 3-4 days [consecutively]," the leaves are considered warming.

## LILIACEAE

(#111), *flor de teta*, flower used, "for the saints."

(#934), *candelilla*, **kie yachu**, "Todos Santos altar plants, "for the saints."

*Aloe vera* (#172) *sávila*, used externally and internally, leaf sliced in half and heated for back pain from *mallugón* (*magullón*), boiled as tea for *latido*, as hair rinse to prevent hair loss, for good luck (see *Ocimum basilicum*, Lamiaceae).

#### LYTHRACEAE

*Heimia salicifolia* (#179, #588), *yukutuche*, *hierba de cuerda*, well-boiled as tea for *cuerda*, *bilis*, *latido*, *muina*.

#### MALPIGHIACEAE

*Byrsonima crassifolia* (#131, #250), *nanche*, *nachi*, fruit eaten, bark used medicinally, boiled as tea "with *guayaba de costoche* (*Psidium guajave*, Myrtaceae), *hojas de guayaba*, *hierba buena montéz* (*Ocimum* sp., Lamiaceae), for diarrhea, dysentery, *empacho por malpasa de hambre*, a little of each herb."

*Galphimia gracilis* (#945), *flor del cerro*, **kie kia jo'o**, ""for the saints.", substitute for flor de cempasúchil on cemetery floral arches, with *Brugmansia candida* (Solanaceae), *Clematis dioica* (Ranunculaceae) fruits."

#### MALVACEAE

*Anoda cristata* (#292, #309), *violeta*, eaten in *mole* and soups.

*Hibiscus* sp. (#112, #113), *tulipán*, flower used, cultivated ornamental, "for the saints."

*Hibiscus sabdariffa* (#608, #635), *jamaica*, sepals/calyx boiled as tea for dysentery.

*Malvastrum coromandelianum* (#240), *malvarisco*, whole plant used as a broom.

*Sida abutilifolia* (#308, #338), *malvarisco blanco*, leaf boiled as tea with *cinco negritos* (*Lantana* sp., Verbenaceae) for dysentery.

*Sida glabra* (#1037) possibly *pastorcita*, use as for unidentified Scrophulariaceae with same common name.

#### MARTYNIACEAE

*Martynia annua* (#310, #370), *uña de gato*, *uña de león*, leaves applied externally to wounds, also "as a trap for insects, to gather fleas, use a lot of leaves, and they stick to the leaves."

#### MELIACEAE

*Melia azedarach* (#108, #605), *flor de paraíso*, flower used "for the saints."

#### MIMOSACEAE (see also Fabaceae)

(#295), *vergonzosa*, root is boiled as tea to speed labor.

*Acacia* sp. (#252), *agaroble*, *cascara de agaroble*, *garoble*, *sukua ya tse jo'o*, bark boiled as tea, with bark of *nanche* (*Brysonima crassifolia*, Malphiaceae), *guayaba de costoche* (*Psidium guajave*, Myrtaceae), bark of *cuaolote* (*Guazuma ulmifolia*, Sterculiaceae)."

*Leucaena* sp. (#190, #525), *guaje de agaroble*, *laka' yandi'a*, fruit, shoot tip and young leaves are eaten by people and burros, "the leaf is pretty."

*Mimosa* sp. (#517, #868, #1026), *sarsa*, flowers boiled as tea to induce abortion, "for women who are pregnant from the street," the root is used for dysentery and diarrhea.

*Pithecellobium dulce* (#80), *guamuche*, *wa'a'*, green inner bark boiled as tea for *empacho*, *empacho from malpasa de hambre*, children's and adult diarrhea, "with *cinco negritos*, *hierba de empacho*, *cascara de guayaba*, *cascara de nanche*, *cascara de cuaolote*, *tortilla quemada* (7 herbs) for *empacho de malpasa de hambre*, a little of each, three consecutive mornings" (see *hierba de empacho*, *Lippia* sp., Verbenaceae, for Latin names).

#### MORACEAE

*Cecropia* cf. *peltata* (#260), *guarumbo*, *yatunö*, leaf boiled for diabetes.

*Dorstenia drakena* (#208), *sopladora*, *hierba de paludismo*, *kuityi tikita*, *sön yakuësu* (*lomadora*, *camote de loma*), *sön ngua kitya'* (*camote de fruta aplastada como papel*), fresh mashed root used externally for toothache (*dolor de muela*), "a small piece is applied to the affected area," taken internally as tea for malaria.

#### MYRSINACEAE

(#992), *tiricia*, for *espanto* and *tiricia*, leaves mashed with water or mezcal and applied to body, head.

#### MYRTACEAE

*Psidium guajava* (#124, #125, #251, #615, #870), *guayaba*, *guayaba de costoche*, **ndzüte' kueta**, fruit eaten, leaf, dried fruit and bark used medicinally, boiled as tea for diarrhea (see *hierba de empacho*, *Lippia* sp., Verbenaceae, for preparation).

#### NYCTAGINACEAE

*Bougainvillea* sp. (#115), *bugambilia*, **kie nga'a**, cultivated ornamental, flower used medicinally, boiled as tea with piece of pine wood (*ocote*) for cough; the flower "for the saints."

#### ONAGRACEAE

*Ludwigia octovalvis* (#304), *flor de clavo*, for *aire* of dreams and *disipela*.

#### PAPAVERACEAE

*Bocconia arborea* (#134, #576, #1051), *árnica*, *arnica grande*, **yakijna jo'o**, **yakijna tso'o**, **yandjijna jo'o**, leaf, fresh orange latex (*la cascara pica*) is used "when the face has [dark] spots (*mancha*), the latex is applied to the spot," orange inner bark or leaves boiled as external wash for wounds and cuts.

#### PINACEAE

*Pinus* sp. (#1048), *ocote*, **yakitye ndzu'u nguityitse lue**, (*pine with small cones*) wood used for lumber, for torches, herbs heated over pine smoke, pine cones burned as firewood.

#### PIPERACEAE

*Peperomia* sp. (#503), *orejita de ratón*, leaves eaten fresh as a picante quelite.

*Piper auritum* (#103, #480), *hierba santa*, **yua'**, leaf boiled as tea to lower blood pressure, leaves, blade and petiole cooked in chicken soup, "the stem (*tallo*) is eaten fresh or fried, with salsa, in a taco; the leaf is used to wrap [and broil] eggs."

*Piper psilorachis* (#78, #105, #188), *ezcapatle*, **yakuelu'**, **lakuelu'** (**kuelu'**=joints, *tiene bolas*), leaf used externally, "sprinkled with alcohol

and applied to the affected area, for fractures, back pain and any pain," used with *Citrus sinensis* (Rutaceae) and other herbs in postpartum bath.

*Piper umbellata* (= *Pothomorphe*) (#881), *hierba santa de culebra*, **chī'niyuä**, **yua'kuena**, "lard is applied to the leaf, heated in pine smoke and applied to the stomach when one has cold, to get rid of diarrhea, [placed] on the left side, behind and in front."

## POACEAE

(#975), *zacate de guineo*, forage for animals.

(#976), *zacate de estrella*, forage for animals.

(#977), *zacate marquerón*, forage for animals.

*Arundo donax* (#184, #621, #709), *carrizo*, **kii**, **kii ndya shë'**, leaves boiled with other herbs for postpartum bath (e.g., *Citrus sinensis*, Rutaceae, *Litsea glaucescens*, Lauraceae), "green, decoration for the saints (*verde, adorno para santo*)," stems used for killing snakes and for cutting umbilicus of newborns.

*Muhlenbergia* sp. (#132, #161, #937), *zacate*, *zacate cortador*, thatch grass, whole plant used, for *ojo*, roof construction, "for whooping cough (*tosferina*), wrapped on a collar [on the dog] for catarrh of dogs," "for *ojo*, when the children cry a lot, seven chick quills (*cuillitos*), seven pieces of a baby's diaper, seven pieces of chile or picante, and seven pieces of *zacate* from the four house corners are burned [together] in the fire. Holding the child in both hands cense him with the smoke, three times forward [and back], three times to the left and right, in the form of a cross, six times in all," considered cooling.

*Zea mays* (#164), *totomoxtle morado de maíz*, purple bract boiled to make tea, "with *hierba ceniza* (*hierba del parto*), for difficult childbirth, 2-3 leaves (bracts)." Purple bracts used with copal to cense woman to speed delivery. (Maize has many other non-food uses: e.g., cobs are used as firewood, toilet paper, tool for pottery making, stopper for water gourd, "Leggo" type building blocks for children, tool for degrading maize; husks are used as napkin type wrapping, for heating food, as tinder, for sweeping.)

## RANUNCULACEAE

*Clematis dioica* (#137, #488, #556, #595, #609, #954), *barba de viejo*, **luty kitse'** (*bejuco de pelo*), the white fruit is used for swelling (*hinchazón*) and



children's fright (*espanto de niños*), "when the children don't eat well and are weak and thin."

#### RHAMNACEAE

*Gouania* sp. (#986) the root is used for *latido*.

#### ROSACEAE

*Rosa centifolia* (#92, #114, #174, #373), *flor de castilla*, cultivated ornamental, petal, leaf and flower used externally, one handful boiled as a bath for fever or combined rubbed on the body fresh with *pastorcita* (Scrophulariaceae and/or *Sida glabra*, Malvaceae), the cooled tea of petals as a wash for cataracts *nube del ojo* ("eye cloud," "there is a white thing and one can't see"), also "flower for the saints."

#### RUBIACEAE

*Randia armata* ssp. *armata* (#151), *verengel*, leaf and fruit used, the fruit is edible, the leaves are medicinal, the leaves are boiled and the tea is drunk at room temperature throughout the day (*como agua al tiempo*), for hepatitis, "for the liver," the tree is admired because of its branching pattern "like a cross."

#### RUTACEAE

*Citrus aurantifolia* (#116, #357, #362), *limón*, *limar*, *lima limón*, **hojas de lima**, cultivated non-native, leaf and fruit used, cultivated fruit tree, for fever, cough, see *Tecoma stans* (Bignoniaceae) for preparation, juice used to soothe insect bites, "leaves for the saints because they are green." leaves a symbolic petition for money sometimes left as offering, considered cooling.

*Citrus limetta* (#361), *lima de chiche*, cultivated non-native, fruit eaten, leaves used fresh with *Tecoma stans* (Bignoniaceae), for fever.

*Citrus sinensis* (#358), *naranja*, cultivated non-native, leaf and bark used, boiled in tea, with two or three spines of maguey (*Agave angustifolia*, Agavaceae), mango leaf (*Mangifera indica*, Anacardiaceae), flor de bugambilia (*Bougainvillea* sp., Nyctaginaceae), canela (*Cinnamomum zeylanicum*, Lauraceae) for cough; used externally, boiled with *hoja laurel* (*Litsea glaucescens*, Lauraceae), *hoja de carrizo* (*Arundo donax*, Poaceae), *yerba de cangrena* (*Tournefortia densiflora*, Boraginaceae), *ezcapatle* (*Piper psilorachis*, Piperaceae) for postpartum sitz bath.

## SAPOTACEAE

*Pouteria mammosa* (#471) *hueso de mamey*, fruit eaten, sometimes sold for cash, seed used for smoothing pottery after corn cob rolling of sides, Zapotec use for cough, applied externally, ground to a paste with Vapor Rub.

*Pouteria campechiana* (#861, #367) *zapote blanco*, *zapote durmilón*, for fever, apply the leaf "because it is cold," to cure *ojo de muchitos*.

## SCROPHULARIACEAE

(#855), *camote de clavillo*, mashed with a hot rock and applied to the *clavillo* (type of skin infection).

(#93), *chibato*, leaf boiled as a hot tea for postpartum pain, "a handful or more if available, in a cup of water."

(#171), *pastorcita*, leaf used externally "with *rosa de castilla* (*Rosa centifolia*, Rosaceae), the white foam of the whole fresh plant is rubbed on the whole body for fever, a lot of herb, enough to cover the whole body," considered cooling.

*Russelia* sp. (#541, #569), *hierba de chaneque*, for *chaneque*, seven branches used to hit the affected area, for "sudden pain" from chaneque.

*Scoparia dulcis* (#123, #160, #255), *epazotillo*, *epazotilla*, *hierba de chaneque*, whole plant used externally "for *chaneque*, a strong pain that comes suddenly, one makes a cross with branches over the painful area and another person hits the painful area with the plant, then the branches are placed on the road [where the chaneque attacked] in the form of a cross."

## SOLANACEAE

*Brugmansia candida* (#155, #291), *florifundio*, cultivated ornamental, flower and leaf used, external use as a *limpia*, for ojo, "crying a lot" (infant colic), "crying a lot from seeing strangers," "with seven flowers, rolled and rubbed over the whole body, arms, legs, feet, then the seven flowers are opened and applied to the forehead, [the flowers on the forehead are] blown with mezcal, and pure water comes out. The leaf is used if there is no flower. You can't drink this flower [as a tea] because it causes one to go crazy;" as a "limpia for ojo, green diarrhea with fever and vomiting, 14 *florifundio* leaves, a newly laid hen's egg painted with crosses and the face of a person with charcoal, cleansed well, 7 by 7 times." Also used for *tiricia* (*pesadumbre*) (similar to *ojo*); for enuresis (*los niños orinan de noche*), "a piece of [broken] comal is heated, wrapped in a *florifundio* or

*bule* (*Lagenaria siceraria*, Cucurbitaceae) leaf and applied to the left side, above the spleen. For pain, the mashed leaf pulp (*masa de la hoja*) is heated and applied to the painful area.

*Cestrum glanduliferum* (#211, #239), *madrina del cacao*, *nya'tya nduya'*, leaf used externally, the fresh leaf is smeared with beef or coyote lard, or moistened with alcohol, then heated over the smoke of the comal or over pine smoke and applied to the painful area. The leaf may be wrapped and left overnight.

*Datura stramonium*, (#474), *flor de San Miguel*, the fresh leaf or fruit is applied externally for pain.

*Lycianthes* sp. (#229, #236), *chiche de venado* (*así es la fruta*), fruit edible, sweet.

*Solanum* cf. *erianthum* (#351, #879), *lágrimas de María*, burro fodder, decoration (usually for the saints).

*Solanum* cf. *lanceolatum* (#509), *sancayetano*, *diente del perro*, for enuresis (bedwetting), "the slightly green wood is placed in the fire, and the foam that exudes from the wood is placed in the umbilicus and surrounding area, 2-3 times, until it goes away."

*Solanum americanum* (#227, #289, #1059), *hierba mora*, whole plant used, for *disipela* (a type of infected wound or infected insect bite).

#### STERCULIACEAE

*Guazuma ulmifolia*, (#86, #372), *cuaolote*, *yanguiyu'*, bark and fruit used. bark boiled as tea for *empacho*, diarrhea, *empacho por malpasa de hambre*, "combined with other herbs (see *hierba de empacho*, *Lippia* sp., Verbenaceae for list), taken three consecutive mornings before breakfast, fruit boiled as tea for cough, fruits also fodder for goats and burros, fruits edible, sweet.

*Waltheria indica*, (#146, #897), *malvarisco*, *malvarisco blanco*, *yalakuä' kachi*, *yatsukuä' kachi*, root used for diarrhea, dysentery, the root is mashed, strained and drunk, one root to 1/2 a calabash (about 8 oz.), less for a child, or boiled as tea with *cinco negritos* (*Lantana* sp., Verbenaceae) for diarrhea.

#### TILIACEAE

*Luhea* sp. (#374), *garabato*, **rabatú**, wood used in construction and as a hanging rack in the house because of the branching.

*Trema micrantha* (#867), *nigua*, *arbol de nigua*, **yala tya kyëjë'** (**yakua clayuda**), fruit eaten, bark used for lashing.

#### URTICACEAE

(#207), *aspera*, *hoja aspera*, **yakuatyë**, **yakuate**, leaf used externally, applied to the affected area, for back pain and pain in general.

(#473), *chichicaxtle*, **yandakü**, taken as tea for back pain.

#### VERBENACEAE

*Lantana* sp. (#147, #204, #230, #300, #329, ), *chibarobo*, **kyishe jlyä**, fruit edible, leaf boiled as bath with *tepozán*, *garañona*, *casahuate*, *luís perez* (see *Pluchea salicifolia*, Asteraceae, above, for other names) for swelling, edema.

*Lantana* sp. (#201, #219, #244), *cinco negritos*, **kie' kunase**, leaf and root used, root boiled as tea with root of malvarisco blanco (*Waltheria indica*, Sterculiaceae) for dysentery, diarrhea, *empacho* from *malpasa de hambre*.

*Lippia alba* (#177), *pitona*, **kiunu' kuachi'**, cultivated spice and medicinal, leaf boiled as tea for *empacho*, *diarrhea*; used for cooking iguana, "for colitis, when the stomach is loose, *muina* and *aire*," as tea combined with *ruda* (*Ruta chalapensis*, Rutaceae) for vomiting in children (also *empacho*), as tea combined with *santa maría* (*Tanacetum parthenium*, Asteraceae), *hierba santa de culebra* (*Piper umbellata*, Piperaceae) to speed labor, considered warming by some and cooling by others ("*la pitona es fresca, sirve para la muina.*").

*Lippia* sp. (#486), *salvia*, *salvoreal*, *salverreal*, one sprig (*cogollo*) boiled as a postpartum bath eight days after childbirth, with 7 orange sprigs, 7 carrizo sprigs (*Arundo donax*, Poaceae), 7 sprigs of laurel (*Litsea glaucescens*, Lauraceae), "the lower half of the body" (sitz bath).

*Lippia* sp. (#221, #223, #293, #312, #336), *hierba de empacho*, root boiled as tea, "the water turns black," "for *empacho* and diarrhea, with cinnamon, *hierba buena* (*Mentha x piperita*, Lamiaceae)," or "with *guamuche* (*Pithecellobium dulce*, Mimosaceae), *cinco negritos* (*Lantana* sp. Verbenaceae), *guayaba* bark (*Psidium guajava*, Myrtaceae), bark of *nanche* (*Byrsonima crassifolia*, Malphigiaceae), bark of *cuaolote*

(*Guazuma ulmifolia*, Sterculiaceae), burnt *tortilla* (7 herbs) for *empacho por malpasa de hambre*, a little of each, three [consecutive] mornings (*tres ayunas*)."

*Lippia* sp.? (#166), *orégano*, leaf used, cultivated medicinal and spice, taken as tea to induce vomiting as a poison antidote.

*Lippia* sp. (#472), *hierba dulce* boiled as tea for *empacho*.

*Verbena* sp. (#88, #218, #317, #863, #985), *verbena*, **kyishe jlya** (*hierba amarga*), leaf or whole plant used, the leaves are mashed fresh (*fresca, verde*) with water and drunk, for "children who cry [a lot], bitter taste in the mouth, *latido, muina, ojo*, 4-5 hojas in 100 ml water (*medio taza*)," "the ground powder is applied to wounds after washing," "for luck, seven branches are cut and kept with one's clothing for protection," considered cooling and bitter.

#### VITACEAE

*Cissus sicyoides* (#87, #214, #302, #353, #880), *bejuco de sana de todo, sana de todo, sana lo todo, luti nguano*, leaf used externally, "cut a piece [of leaf] and apply to the growth (*tumor*) with almond oil," for "warts and small growths (*tumores*), pain," "spread lard and apply where there is a pimple or wart (*grano, clavillo, barro, espinilla*)," considered cooling.

*Vitis tiliifolia* (#504), *uva*, "fruit eaten, to make a fresh fruit beverage beat the fruit with salt, comes out very tasty, when the fruit is ripe."

## Appendix B: Chinese Glossary

- bei* grief 悲  
*beiyou* sadness 悲忧  
*ben* lit. root 本  
*ben zhu* running piglet 贛豚  
*biao ben tong zhi* treat symptoms and cause together 标本同治  
*biao* symptoms 标  
*bu* tonifying 补  
*da bing* grave illnesses 大病  
*dan* bland 淡  
*dang ji* temple mediums 堂乩  
*dong qi an zhi lao ruo tong* 动气 掣之牢若  
*feng* craziness, mental illness 疯  
*feng han* wind cold 风寒  
*feng* wind 风  
*fengshui* geomancy 风水  
*gai hun* soul cover 盖魂  
*gong sun* Spleen 4 公孙  
*gu chang* lit. drum intestines 鼓肠  
*gu qi* grain qi from food 谷气  
*han* diaphoretic 汗  
*he* harmonizing 和  
*hun* ethereal soul 魂  
*jin ye* secretions and fluids 津液  
*jing qi* or essence qi 精气  
*jing feng* fright wind 惊风  
*jingluo* meridians and connecting vessels 经络  
*kong jing* fear and fright 恐惊  
*kong qi* air 空气  
*ling zi* lit. spirit or soul seed 灵子

liu xie six evils 六邪  
 ming men life gate 命门  
 Nan Jing Difficult Classic 难经  
 nei guan Pericardium 6 内关  
 nu anger 怒  
 po corporeal soul 魄  
 qi 气  
 qi wei xue zhi shi qi is the leader of the blood 气为血之帅  
 qie palpation 切 (按 an)  
 qing clearing 清  
 re du heat toxin 热毒  
 san yin jiao Spleen 6 三阴交  
 se astringent 涩  
 shen spirit 神  
 shi excess 实  
 shi re excess heat 实热  
 si or si lu overthinking 思虑  
 si thought 思  
 si zhen four diagnoses 四诊  
 Su Wen Simple Questions 素问  
 tai xi Kidney 3 太溪  
 tiao tong jumping pain 跳痛  
 tu vomit 吐  
 wang looking 望  
 wei qi protective qi 卫气  
 wei zhong Bladder 40 委中  
 wen listening and smelling 闻  
 wen questioning 问  
 wen warming 温  
 xi joy 喜  
 xi thready, fine 细

*xia* purging 下  
*xiang* aromatic 香  
*xiao* reducing 消  
*xu re* deficiency heat 虚热  
*xu* vacancy, deficiency 虚  
*xue wei qi zhi mu* blood is the mother of *qi* 血为气之母  
*xuwei* acupuncture points 穴位  
*yang* 阳  
*yin* 阴  
*ying qi* nutritive *qi* 营气  
*you* worry, anxiety 忧  
*yuan qi* original or source *qi* 元气  
*zhen* or *zheng qi* the normal *qi* of the body 真气, 正气  
*zhong yi* Chinese medicine 中医  
*zong qi* ancestral *qi* 宗气



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## **Vita**

**Janna Weiss was born in Brookline, Massachusetts on September 5, 1956 to Ruby Snyder and David Weiss. She attended Solomon Schechter Day School and Weeks Junior High School in Newton, Massachusetts. In 1970 she moved to Kibbutz Allonim, Israel. She graduated from Carmel-Zvulun Regional High School, in Kibbutz Yagur, Israel in 1974. From 1974-7 Janna was a guide for hikes at the Mt. Meiron Field Study Center in north Israel. She graduated from the American College of Traditional Chinese Medicine, San Francisco, California after completion of a two year program and was licensed in acupuncture by the State of California Board of Medical Quality Assurance Acupuncture Examining Committee in 1983. She is a diplomate of the Nanjing College of Traditional Chinese Medicine's Advanced Course in Acupuncture and Moxibustion (1984). Janna received her Bachelor's of Arts in Liberal Studies, magna cum laude, from San Francisco State University, San Francisco, California, in 1986. From 1986-9 she had a private practice in acupuncture and herbal medicine in Jerusalem, Israel and taught Chinese medicine at Bar-Ilan University's acupuncture program for medical doctors.**

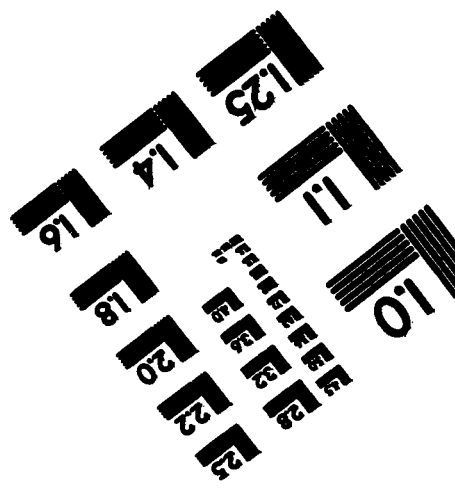
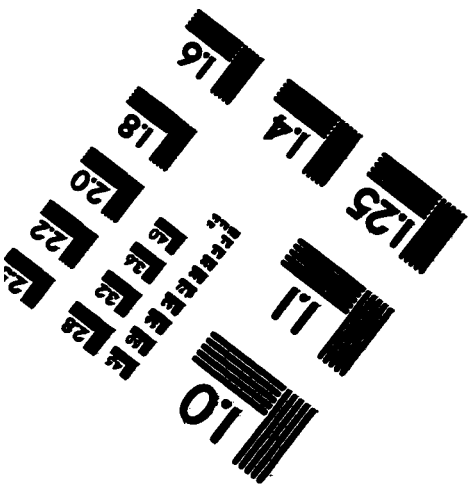
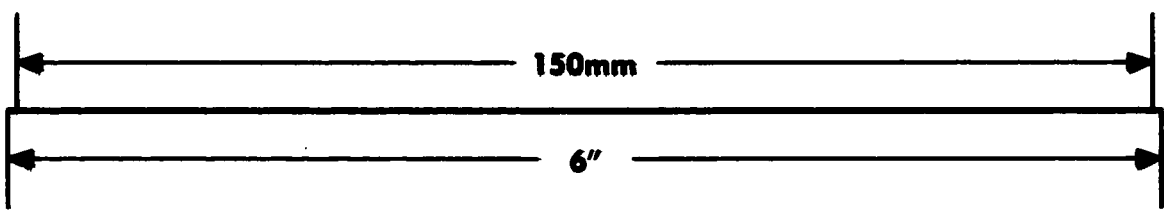
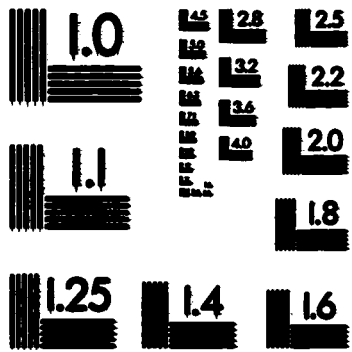
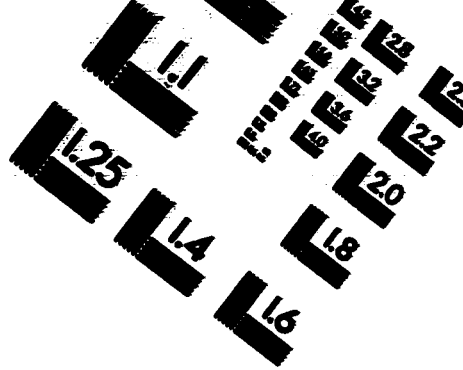
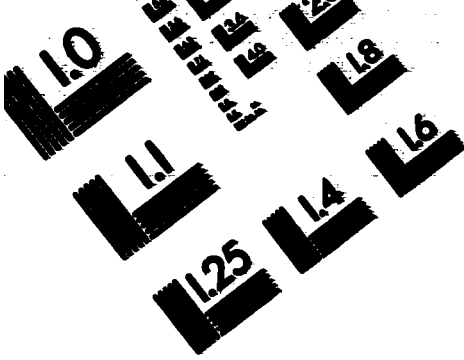
**Janna Weiss entered the Botany program at the University of Texas in 1989. She taught biology and botany as a Teaching Assistant at the University of Texas at Austin. She spent two years conducting fieldwork in Oaxaca, Mexico (1993-4). Her dissertation research was supported by grants from Fulbright-**



**García Robles, The Lindbergh Fund, Organization of American States, University of Texas Continuing Fellowship, Sigma Xi Grant-In-Aid of Research, Tinker Foundation, University of Texas International Education Fund Scholarship, and a University of Texas Botany Department Walter Brown Memorial Scholarship. Her son, Agam Shalev Ben-Levari, was born on September 19, 1995.**

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