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Medicinal Plants Used in Mapuche Traditional Medicine in Araucanía, Chile: Linking Sociocultural and Religious Values with Local Heath Practices

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Abstract

The vast majority of the medicinal plants in Chile have been studied from a pharmacological point of view. These studies, although giving important insights into the understanding of the Mapuche's traditional medicine in terms of the therapeutical value of the plants, fail, however, to portray the numerous sociocultural and symbolic aspects of this form of medicine. This article aims to overcome this shortcoming by analyzing the sociocultural and religious values of medicinal plants among the Mapuche's rural communities in Araucanía, Chile, as well as their role in traditional medicine. The methods utilized combined participant observation with individual interviews with local shamans (machi) and villagers. Data from free-list interviews and conversations with research participants were used to develop a series of semi-structured interview questions on knowledge of herbal medicines and plants. Data show that the therapeutic efficacy of Mapuche medicine is not only based on "active agents" but is also related to the symbolic and religious meaning attributed to the treatments by healers and patients. The article concludes that in order to fully understand the therapeutic efficacy of the plants, it is thus necessary to comprehend the sociocultural context in which they are used.

Keywords

ethnomedicine, Mapuche culture, machi, medicinal plants

Introduction

Interest in traditional knowledge is increasing, as reflected in development policies, the media, and scientific literature around the world (Godoy et al., 2000). In South America, traditional healers and

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traditional plant-based remedies play an important role in the health of millions of people (Kisangau, Lyaruu, Hosea, & Cosam, 2007; Pesek et al., 2009).

While acknowledging the important role of the active agents in medicinal plants in terms of their use, it also must be recognized that sociocultural and religious aspects have a deep influence in the perceptions and uses of medicinal plants, especially among indigenous communities (Etkin & Elisabetsky, 2005; Nettleton et al., 2007; Uniyal, Awasthi, & Rawat, 2002).

Only a few studies have sought to understand the use of medicinal herbs in Chile in their local context (Ladio & Lozada, 2004; Mösbach, 1992; Muñoz, Montes, & Wilkomirsky, 1999). Most of these works have adopted a descriptive and pharmacological approach and fail to consider the sociocultural context and symbolic aspects, as they are focused on the therapeutical value of the plants. In Chile, there are a number of native plants that have not been studied in depth with reference to the complexity of their cultural context, especially those having a shamanic use (Ladio & Lozada, 2004). This article aims to address this shortcoming by analyzing the sociocultural and religious values of medicinal plants among rural communities in Araucanía, Chile, and their role in traditional medicine.

Medicinal Plants and Their Importance

Many studies in ethnopharmacology are rather general works that document the use and constituents of plant substances used medicinally. Several of the more comprehensive presentations (Etkin, 2001; Gollin, 2004) are at least implicitly ecological in orientation, as they divide attention among the climatologic and human histories of the region and the use not only of medicinal plants but also of flora and fauna in diet, manufacture, and other applications. For the greatest part, these ethnobotanical inventories present botanical and pharmacologic data disembodied from their social and cultural contexts; they cannot accommodate theoretical or conceptual issues, and in fact contain little by way of analysis, or even interpretation (Green, Bradby, Chan, & Lee, 2006; Han, 2000; Kirmayer, 2004). They lack careful attention to the specific circumstances and contexts in which plant utilization occurs—that is, data regarding mode of preparation and gathering of medicinal plants.

In contrast to general inventories are studies that attempt more broadly to contextualize features of perceptions about plants and of plant use, pharmacology, and sociocultural aspects (Leonti, Sticher, & Heinrich, 2002; Morales, Lara, Kington, Valdez, & Escarce, 2002). These studies explore both biological and behavioral and cultural parameters to formulate questions within the broad outlines of a human ecology that seeks to understand human–plant interactions in the most comprehensive sense and to assess the impact of such behaviors on health.

Ethnopharmacology's main weakness continues to be poor integration of ethnography and pharmacology (Etkin, 2001; Pieroni, Muenz, Akbulut, Baser, & Durmuskahya, 2005). With rare exception (Quinlan, Quinlan, & Nolan, 2002; Rivera, Ortiz, Lawson, & Verma, 2002), the ethnographic data that guide pharmacological analyses of indigenous medicines are limited to uses, preparation methods, and administration techniques. Although the field of ethnomedicine has recognized that lay people and folk healers from all over the world discover biologically active compounds in plants based on their own theories of the body, sickness, and its treatment (San Miguel, 2003), ethnopharmacologists have not taken such knowledge seriously. This article illustrates how nonspecialist understandings of medicines and their actions on the body can contribute to the aims and objectives of contemporary, transdisciplinary ethnopharmacology.

The literature available on medicinal plants in Chile reflects the current trends which promote the utilization of traditional medicine with the objective of finding more viable alternatives to allopathic drugs (Ladio & Lozada, 2004; Mösbach, 1992; Muñoz et al., 1999). These studies mainly focus on uses, chemical composition, and medicinal properties of medicinal plants while attributing little role

to the sociocultural context in which these plants are used. The goal, as explicitly stated by these authors, is to restore and promote herbal medicine as a resource in health care (Ladio & Lozada, 2004). In this respect, these authors propose some suggestions regarding home self-care and medicine that is based on the properties and more demonstrable therapeutic value of plants and the practices that have been confirmed empirically (German Technical Cooperation [GTZ], 2001; Gomez-Beloz., 2002). However, these studies do not include any of the values attributed to plants by the Mapuche's communities.

On the other hand, authors such as Scarpa (2002) and Janni and Bastien (2004) remind us of the importance of contextualizing the use of medicinal plants by linking them to their own cultural settings. According to these authors, focusing only on the extraction of active ingredients leads to an underestimation of other important sociocultural elements that characterize the use of the medicinal plants. The work of Leonti, Sticher, and Heinrich (2002) and Ladio and Lozada (2003) endeavor to follow the more holistic approach previously described.

The indigenous knowledge in ethnomedicine available today is the outcome of the accumulated experiences of local communities with their local ecosystem, which also enabled them to maintain their sociocultural identity (Hirt & M'Pia, 1995; Juárez, 2001).

The aim of this article is to describe how machi (traditional healers who are shaman) and local villagers of Mapuche community in the rural village of Chol Chol (Chile) in the region of Araucanía, understand the pharmacology of the medicinal plants (lawen) they use. I discuss their pharmacopoeia, which includes herbal medicines, the way they classify them, and their understanding of their uses. The intent of this analysis is to show how ethnographic and pharmacological research on medicinal plants can better our understanding of the cultural and symbolic values of indigenous ethnopharmacy and improve the health of marginalized peoples in rural areas.

Material and Method

The data are based on a field study carried out from March to April 2009, in the village of Chol Chol, Araucanía, Chile. The methods utilized combined participant observation with individual interviews with six machi and four lawentucefe (connoisseurs of medicinal plants inside the Mapuche's community). The traditional healers were all female and their ages ranged from 42 to 75. Individual and in-depth interviews also took place with 30 villagers who possess particular knowledge on local medicinal plants and their therapeutical uses. The villagers, whose ages ranged from 28 to 71, were selected based on their representativeness and willingness to participate.

Chol Chol, located in the Province of Cautín in the IX Region of Araucanía, borders the communes of Lumanco Galvarino to the North, the town of Temuco to the East, the municipalities of Lumanco Galvarino to the West, and the municipality of Nueva Imperial to the South. The climate of this region is temperate, with mild and quite rainy winters. The area receives humid westerly winds and has a mean annual temperature ranging between 9.5 C and 5.4 C. The average annual precipitation ranges between 500 and 1500 mm and is concentrated in autumn and winter (March−September).

The access to the city of Temuco is made easy by a paved road. Regular public transport service is available between Chol Chol and the other surrounding cities. Raising livestock is one important source of income for local communities. Numerous inhabitants belong to the indigenous group of Mapuche and rely on medicinal plants (lawen) for their basic health care. Most of them consult machi, who are generally held in high esteem as traditional medical practitioners or shaman. The machi are consulted particularly when health problems are considered related to ''illnesses of the soul'' or other supernatural factors.

The interviews consisted of semi-structured questions in which general information was gathered about the different uses and knowledge of medicinal plants, as well as their reputed therapeutic

effects and sociocultural values. Data were also gathered regarding the past and present challenges of ethnomedicine, with a special focus on possible ecological changes in the local environment.

Anthropologists and ethnobotanists use free listing to identify the items that belong in a given cultural domain (Martin, 1995; Weller & Romney, 1988). In this research, the villagers and traditional healers completed free-list interviews, in which they were asked to name all of the medicinal plants they know. Although there may be a difference between listing a remedy and actually using it, the number of interviewees who list a given remedy is partially representative of a plant's cultural importance (Pieroni, Quave, Nebel, & Heinrich, 2002).

Additionally, data from free-list interviews and conversations with research participants were used to develop a series of semi-structured interview questions on knowledge of herbal medicines and plants. Semi-structured interviews took place with 10 traditional healers. In these interviews, research participants were asked about the treatment goals, desired pharmacological activities, preparation and administration methods, and expected outcomes of the most common medicinal plants used in the area.

The research undertaken obtained the consent of the Ethic Committee of the University of Montreal, Canada. Upon consent of research participants, I audio-recorded interviews and transcribed them verbatim. In this article, quotations are presented in English, which have been translated from Spanish.

The common local names of plants included in the free lists were correlated with scientific names using published materials on Chilean herbal medicine. In general, cited plants were well-known Mapuche plants, whose names refer to a single species. Gomez-Beloz (2002) has indicated that this survey method is an important analysis tool, especially when baseline plant information is already known and published for a given indigenous group. Plants were classified following the nomenclature of Correa (1969–1999) and Marticorena and Quezada (1985).

The Use of Medicinal Plants and Their Cultural Context

According to Kleinman (1980), disease is not an entity but an explanatory model of culture. Disease belongs to culture, in particular to the specialized culture of medicine. In other words, from a cultural perspective, disease is knowable, by both sufferers and healers alike, only through a set of interpretive activities. These activities involve an interaction of biology, social practices, and culturally constituted frames of meanings and results of clinical realities.

One of the most important aspects to which the utilization of medicinal plants is ascribed by the Mapuche's communities is their values to the Mapuche's vision of the cosmos. The machi interviewed emphasized how, according to the traditional Mapuche vision, the whole world is inhabited by both the deities and forces that protect life and health, as well as by evil spirits that can cause illness and misfortune to human beings. The polarities of good/bad and health/disease are perceived as necessary and complementary for maintaining the harmony of the cosmos; these polarities need to be maintained in balance. These concepts of harmony and balance imply that there is a natural order to the universe that, if disturbed, results in illness to either an individual or a community.

The plants do not just belong to nature and to the universe, but their therapeutical value, from an ontological point of view, is attributed to them by supernatural forces. This concept is well emphasized by a middle-aged machi who cites, in an explanatory way, a song she sings:

> I have in my hands the remedies
> All the best remedies
> The most powerful remedies
> That God has placed in my hands ...

According to the Mapuche tradition, medicinal plants have a pullu (soul) and are governed by a set of rules that determine their utilization by human beings. Although medicinal plants are delivered by the divine and their role is to heal human beings, if some roles are not respected, they can become a force against the individual who has broken the cosmic, social, or natural balance.

The machi interviewed have explained how these rules govern every aspect of the relation between human beings and plants, including determining how a plant should be collected and how the treatment derived from the plants should be prepared.

According to traditional Mapuche medicine, each plant has a superior owner called the Ngenenmapun. As a consequence, the machi has the duty to pray to the divinities that abide in the plant in order to ask their authorization to collect and use the plant to heal the patients. If these rules are not followed, the plant would lose its therapeutic effect and, even more so, the person who gathers it could become ill.

One machi interviewed affirmed that when someone wishes to collect a plant, she should introduce herself to the plant and explain why she wants to use it. While accompanying a machi to the field to collect some plants together with her patient, it was observed how these principles and rules were highly respected: the machi prayed to her guide spirit, asking him to give her strength so that the medication she would prepare could be effective in healing the patient:

> You gave me in the dream this remedy to allow me to heal, today I come here to collect the plants you indicated to me. I thus ask permission to the soul of the plant in order to be able to help this diseased lady who is accompanying me.

Shamanism is intimately connected to animistic worldviews. It is in relation to such deferential and affective interaction between the healer and the spirits present in the woods that that the element of trust, based on active mutual and respectful engagement and appreciation, gains its significance (Price, 1975).

Learning Process, Knowledge, and Specialization

The learning process through which the plants are chosen and combined in the traditional medications is achieved in two ways—one empirical and another experiential (Pewman Lawen—the revelation of medicinal plants through a dream)—both are passed from generation to generation among the families living in the area and the other holders of magic and spiritual knowledge (kuymun). However, these empirical and magical–religious methods of gaining knowledge about plants are not mutually exclusive; they complement each other. In the search for a cure, the patient and his family handle two different types of remedies, for example, ''home remedy'' and ''specialized'' remedy. The latter is prepared by traditional healers such as the machi.

The majority (25 out of 30 villagers interviewed) emphasized how the knowledge and the therapeutic use of plants at the household level traditionally belong to women and is usually transmitted from mothers and grandmothers to the younger generations in the early teens.

The villagers, especially middle-aged women and women with children prefer herbal remedies to pharmaceutical drugs. It is generally reported in the literature that people living in rural areas lack sufficient access to health care services in Chile, due to the high cost of professional medical care or a lack of transportation (Morales et al., 2002) as well as cultural differences between professional medical care and indigenous culture. Although all of these are potential barriers to mainstream medicine in rural areas in Chile, they are not the only factors that keep rural villagers from going to doctors' offices and hospitals. In Chol Chol, as in other Mapuche communities, self-medication with herbal medicines and other nonprescription medications is usually the first response to sickness. The data suggest that this phenomenon has more to do with the fact that self-medication is an effective option, than to the

inaccessibility of other options: 23 out of 30 villagers interviewed affirmed that traditional medicine was more effective than Western medicine, especially for certain diseases.

Mapuche perceptions of the safety of different types of medicines provide a further explanation of why self-medication and traditional herbal medicine is favored in most situations in the rural area under study. The villagers interviewed, especially the women, forego consultations with doctors because they are not interested in the "dangerous" medicines they offer, especially if appropriate herbal remedies are available. The belief that herbal remedies have no negative side effects and that pharmaceuticals are dangerous, although not always accurate, is found elsewhere in the Americas (Good & DelVecchio, 1995; Wayland, 2004).

The selection of which medicinal plants need to be used will depend on the cause of the disease. This aspect determines whether the sickness can be treated at home or by a machi. In general, both the diagnostic process and the therapy carried out at home have an empirical nature but involve in some cases religious elements such as prayers, which are used while collecting and using plants and performing other ritual and symbolic actions (Chen, Kleinman, & Ware, 1994; Sandhu & Heinrich, 2005). By contrast, for the disease perceived as "spiritual" (weda kutre), which is generally considered more serious, stronger remedies are required than those for physical diseases. The remedies used to cure spiritual diseases are generally believed to be revealed to the machi in their dreams.

In this respect, a 67-year-old machi affirms that some years back her nephew came back from Santiago, and asked a neighbor to hire him to work in his farm. At the end of his work, the neighbor believed that the boy did not perform his work in a satisfactory way and he cursed him as a form of punishment. The machi relates that from that day her nephew started having severe headaches and stomach pains, which became increasingly intense. One night the machi dreamed of a white-haired old lady who took her to the edge of a stream and showed her the plant of Huique (*Coriaria ruscifolia* Feuille) which she could use as a decoction to heal her nephew. After the boy drank the decoction, he fell unconscious and when he woke up he had fully regained his health.

The machi also reported experiencing the perimontum or pewman (visions) during which sometimes the remedies are revealed to her. In this respect, the machi says that she had her first perimontum at the age of 18: she recalls that she had gone to graze the sheep and that suddenly she saw a very bright white cloud. When the brightness decreased, she distinguished a horse which came close to her and brought her some plants with which she was supposed to cure her patients.

In addition to plants having a therapeutic use, there are some plants which play an important role in the shamanic practice of the machi. She says that these plants are delivered to her by the other machi who initiated her into her therapeutical and spiritual role. According to the Mapuche's tradition, a young machi learns the secrets of herbal medicine through observation of and practice with other machi, who initiate her into her role of traditional healer. This period generally has a duration of 2−4 years. For example, one 32-year-old woman explained that her apprenticeship lasted for 3 years. Those apprentices who have a relative who is a machi learn from them and do not need to address themselves to other people outside their families.

The process of gaining knowledge is essential for the machi to enable her to use medicinal plants and to carry out the necessary therapeutic rituals. Although in some cases, the patient and her family can help the machi in the collection of specific plants, they are not allowed to know how the medicine is prepared and which plants are combined. Although there could be a patient presenting the same symptoms, the remedy for different patients may vary if the disease is perceived to have another cause. This can be explained by the fact that in the Mapuche medical system, as well as in other indigenous medicine systems, there is in general an emphasis on the cause of an illness rather than on its symptoms.

Multiple Roles of the Plants

The therapeutic use of plants is often considered one of the most important functions of medicinal plants. Nevertheless, the analysis of the cultural context in which these plants are used among the Mapuche's community under study shows that there are some plants having a comprehensive and holistic role. This is reflected by the fact that medicinal plants can have at the same time diagnostic, therapeutic, and preventive functions. The following account of a Mapuche woman in her 50s illustrates this point:

> When I was a girl I was quite thin, weak and very sick with diarrhea. One day I saw a woman of the community passing by my house. She told my mother to give me some leaves of the Kelümamüll (*Luma apiculata*) that should be boiled in water. The woman affirmed that if some foam was produced while washing the plant, this would have meant that I would have lived, if on the contrary there was no foam coming out of the plant, it was a sign that I would have died. Luckily the foam came out of the plant. I drank the decoction and I was healed.

This case illustrates the comprehensiveness and the complexity of the roles of plants according to Mapuche culture. As it is shown, in addition to their therapeutic function, the Lawen (medicinal plants) also performs a diagnostic function. This same diagnostic function of the plant takes place when the machi makes a diagnosis in front of the rewe.[1]

Healing involves a basic logic of transformation from sickness to wellness that is enacted through culturally salient metaphorical actions, such as the use of plants, musical instruments, and enchantments. Levi-Strauss (1967) argued that the transformations of healing involve a symbolic mapping of bodily experience onto a metaphoric space represented in the ritual. At the heart of any healing practice are metaphorical transformations of the quality of experience (from feeling ill to wellness) and the identity of the person (from afflicted to healed) (Albretch, Fitzpatrick, & Scrimshaw, 2000; Brown, 2008; Cappuccio, Duneclift, Atkinson, & Cook, 2001).

The interviews emphasized how the plants have also a preventive action according to the Mapuche and can be used to chase away evil forces. The plants having a protective function have the characteristic of being spicy or having a pungent smell. They can be used as home remedies by the members of local communities or by the machi. The plants most commonly identified with this function are the refu (*Solanum valdivieso* dun**)** and the triwe (laurel, *Laurelia sempervirens*). In their preventive form, these plants are drunk in a form of decoction or used to wash places and people. The example of the plant of triwe demonstrates the double use that a plant can have: when someone is considered to have been cursed by someone, this plant is taken in the form of an infusion. On the other hand, if one thinks that there is a presence of a Wekufu (evil spirit) around the house, this plant is rubbed in the hands, and the doorstep is washed with some water where this plant has been left for 3 days. It is believed that this ritual has the power to chase away the evil spirits.

The same happens with the plant of refu (*S. valdivieso* dun): when a woman dies giving birth to a child, the new-born baby has to take a bath with the stems and pits of the refu plant, which are soaked and left macerating for 3 days in the water. It is believed that this will effectively protect the child from the evil spirit that caused the death of his or her mother. An incense stick is also made with this plant and it is burned in the house to prevent the emergence of any diseases caused by evil spirits. There are also other methods used to chase away what are considered "negative" influences in a house. For example, one old woman explained "Sometimes when I sleep, suddenly I get up scared as I feel the presence of evil spirits. When this happens, I take some branches of chacay (*Discaria trinervis* Reiche) and Quila (*Chusquea quila*) and hit the air everywhere inside the house to chase them away."

Another mapuche woman describes another method she uses "When I wake up in the night all of a sudden due to an evil spirit, I throw water all over the house where I put some leaves of chacay,

I pray the spirit to go back where he comes and to haunt his family, not me. I tell him that I need to sleep ... sometimes I also burn some little branches of the plant of wingam and Chakaya. The plants that have thorns are effective to chase away evil spirits.''

The explanatory model of disease according to the Mapuche's vision clearly mirrors multilevel relations between separate aspects of a complex, fluid, total phenomenon—sickness (Turner, 2004; Wiley, 2008). The dynamic interplay between psychologic and sociocultural levels of sickness requires that a new framework for understanding and treating sickness be developed (Levy & Pescosolido, 2002; Torry, 2005).

From the perspective of biomedicine, authors have contrasted the physiological effects of physical healing and the psychological effects of rituals, ceremonies, and other symbolic action. On closer inspection, however, this distinction is hard to sustain. Research on the many types of placebo effect makes it clear that symbolic stimuli and psychological attitudes and expectations can exert myriad effects on physiology, facilitating healing or aggravating disease (McMahan, 2002; Roof, 1998; Van der Veer, 2001). Of course, this symbolic efficacy is not limited to psychosocial interventions: any intervention will have psychological and social effects based on its meaning for the patient and others with whom they interact (Kirmayer, 2003; Scheff, 1979). Consequently, the material and symbolic effects of healing must be considered as part of one interacting system.

Therapeutical Properties of Plants

In relation to plant-based medicine, it seems clear that even when the plants have empirically derived healing properties, they cannot be separated from the symbolic content that embeds each therapeutic act. In the past few years, most research on medicinal plants has been conducted following three distinct approaches—one aimed at the search for pharmacological properties demonstrable from a chemical and pharmaceutical point of view, another incorporating the symbolic and magical–religious properties of the plants, and the third approach based solely on their empirical use by local communities. Without any doubt, a thorough understanding of the therapeutical role of plants in Mapuche medicine should aim at a distinct approach that combines all these aspects.

The data from the field illustrate that there is a relationship between the phytochemical properties of some plants and their magical–religious values. These plants are those mainly used exclusively by the machi. For example, in the case of the plant of foye (*Drimys winteri*), it has been scientifically proven that this plant has healing properties, being used as an antiseptic, stimulant, diuretic, and antiscorbutic agent (Ladio & Lozada, 2004). From the standpoint of the Mapuche worldview, this plant is very powerful, since it is directly given to the machi by her guide spirit. The machi maintains an empathetic relationship with this plant so much so that if the foye becomes dry, the machi gets sick and cannot heal her patients. In the case of kalkuntun (evil eye) and the introduction into the body of funapue (evil elements), the machi performs a ritual that consists of making an incision in the skin that is then covered with warm leaves of canelo; this combined action entails both therapeutical and symbolic aspects.

Another example of the interrelationship between symbolic and therapeutical values is provided by the sage plant (*Sphacele chamaedryoides*), locally known as alwe Lawen, literally ''plant of the dead.'' This plant has phytochemicals that allow it to synergistically act on the varied systems of the body as a digestive tonic, liver stimulant, kidney purifier, and so on.

The interviews highlight how the meanings of sickness events become a focal issue (Shepard, 2004; Van der Geest, Whyte, & Hardon, 1996) and are interpreted as structural microcosms of the society as a whole (Waldstein & Adams, 2006). In one case observed and recorded in the interviews, a mother related that her child had the illness of konun; this means that he came in contact with and received the last breath of a dying person. This diagnosis had been confirmed by a machi, who observed symptoms of this illness in the child, including such behavioral alterations as fright, sudden

crying, weakness, and restlessness. The child's mother affirmed that she gave the child an infusion of Wique (*Coriaria ruscifolia*) and that she brought him to a machi to complete the healing with the appropriate healing rite. This consisted of the machi rubbing the leaves of the Wique on the body of the child in a small ceremony held at dawn; the religious symbolism of this plant was clearly emphasized. The machi rubbed her hands in the sage leaves and presented these leaves eastward, praying for the child's healing and asking the strength of the sun to defeat the forces of death. Subsequently, she applied the leaves of the plant all over the body of the child.

The curing ceremony is ''socially reconstituting and reoriginating'' (Kapferer, 1996); the shaman seeks to restore the patient's relationships to the physical, metaphysical, and social worlds—to correct the imbalance that is the root cause of the illness. Claude Levi-Strauss (1967) has suggested that symbols themselves are efficacious, bringing order and meaning to the chaotic disruption of illness.

Every system of symbolic healing is based on a model of experiential reality that can be called its mythic world. Here, the word ''mythic'' can be used to imply that there are cultural experiential truths contained in this model. That myth is experientially true has been eloquently stated by Waldstein and Adams (2006, p. 98) as follows: ''the religious–magical system is a great poem, allegorical of human experience, wise in its portrayal of the world and its creatures.'' These truths may be more salient than scientific truths because they represent solutions to personal human problems. The ideas of ''clinical reality'' and ''explanatory model'' (Kleinman, 1978) also describe the mythical basis of symbolic healing.

The concept of treatment efficacy is defined as an indicator of some combination of symptom diminution, resolution of discomfort, or restoration of health. Medicinal and other uses of plants can be considered effective if they meet culturally defined expectations (of patient, curer, and social groups). But efficacy is culturally constructed (Wayland, 2004); that is, the specific criteria that determine how or when some prevention or treatment works may differ considerably among populations, and semiotic, physiological, social, and other measures may be variably salient. Elaborating on Arthur Kleinman's (1980) concept of ''the cultural construction of illness,'' Etkin (2001) describes ''cultural constructions of efficacy'' that are implicit in the way local people understand and use traditional plant medicines and pharmaceutical drugs. There are situations where efficacy is empirically verified, but there are also situations in which it is likely that the healing plants acquired significance for other reasons best interpreted through the analysis of different and intangible symbols.

Since plants can be effective and relevant in the healing process for both their empirical and magical power, in the healing rituals the machi often combine these two aspects. As a therapeutical act, the machi uses them to invigorate and empower her physical and mental strength; as a magical and religious act, she puts these plants on her clothes throughout the ceremony to chase away evil spirits. The plants that are used in these varying ways are mainly the Trike (*Libertia ixioides*), foye (*D. winteri*), and Ngefun (*Guevina avellana*).

Machi Lawen or Specific Remedies of the Machi

The machi interviewed use a set of plants that, as has been previously explained, is given to her directly by the gods of wenu mapu (cosmos, universe) through a Pewman Lawen (the revelation of medicinal plants through a dream). According to the traditional healers interviewed, these revealed plants increase the healing power, defend the machi from evil spirits, and strengthen their spiritual power. A machi gives an account of her Pewman Lawen:

> I had the revelation of which plants to use in a dream. I was shown as remedies the plants of May, Melik, llangkan Lawen, filkun Lawen, Medewo, Traro pillin, wentray, Wilmer, trafentun Lawen, chillum, fenfeyko, Ngao Ngao mewl Lawen, kowul, Chakaya and filu Lawen

Another machi describes her Pewman:

> They (the spirits) threw at me some leaves of foye, they put a stick in my throat to make my voice clearer. They gave me the names of the plants of kowul, maymay Liikanen, Natru, paypawen; they told me to take them, as these plants would help me strengthen my power as a machi and to protect me against evil forces

Within the category of machi Lawen, it is possible to distinguish both real plants and plants that exist only in the symbolic world of the Mapuche. Some Mapuche state that these plants can only be seen and used by the machi as they exist but only in another reality. The plants which are most cited in this category are the meliko (4 waters plant), mari ko (10 waters plant) and mari epu ko (12 waters plant). In regard to these herbs, some machi state that when their simple remedies do not give some satisfactory results, they use these magical plants in the healing process, performing ad hoc rites and asking for the intervention of the spirits. A machi explains:

> When a machi is initiated as a shaman, she receives a ''hierba de las aguas'' (water grass) to reinforce her power. This plant has a round shape and a blue color and resembles a stone. It can fly and it supports its mistress when she performs the rite of healing. If the machi is not good, if she has little power, the plant becomes dry. The name of this plant is likuma.

Ethnoclassification of Plants

Although ethnotaxonomies are considered reflections of how people organize their knowledge of the physical universe, the interpretation of those classifications varies, for example, in differences among structuralist, ethnoscientific/pragmatic, and utilitarian views (Van der Geest et al., 1996; Whyte, Van der Geest, & Hardon, 2002). Many studies have described the selection of specific plants as consistent with basic cognitive principles based on binary oppositions: hot–cold, sweet/salty/bitter—various humoral models through which health is understood as some balance of these symbolic/nontangible qualities. Thus, a medicine is chosen because it has the quality opposite to that of the disorder it is used to treat or prevent. Shepard (2004) has recently challenged the significance of these symbolic contrasts. Especially for the hot–cold categorization in Latin America, she argues that it has become reified, an artifact of ''scientism'' and field methodologies that center about contrasting pairs of terms that, in effect, force respondents to select one or another. Less restrictive methodologies have elicited understanding broader than simple binary oppositions, in some cases describing continua that range considerably between two given categories (San Miguel, 2003).

The humoral (hot/cold) theory of medicine is widespread throughout Latin America and is based on the general principle that cold remedies are used to treat hot illnesses and vice versa. However, the terms hot and cold do not appear to describe the actual thermal temperature of medicines. Instead, the classification of remedies as either ''hot'' or ''cold'' is inconsistent, suggesting that the humoral system is a philosophical mnemonic device that underscores empirical observations of medicinal plant efficacy (Martin, 1995). As one woman explained, ''manzanilla, well you can take it cold but the contents are hot.''

There are other plants that, although considered for the machi (machi Lawen), are also used by other people of the Mapuche community who are connoisseurs of local herbal tradition. According to the machi interviewed, these plants can be classified as follows:

Lawen of the water. These are plants that grow in the water. These plants are believed to have the properties to refresh and renew the power of life, revitalizing the patient and giving him or her new vigor and force. The most cited plants in this category are the Fuy-Fuy (*Juncus chamissonis*), the

Wallo (*Kageneckia oblonga*), and the Wella (*Abutilon vitifolium*). Along with the remedies of refreshing lawen, the machi may add, in the preparation of her remedies, the water where these herbs have grown, which has been exposed to the morning sun.

Lawen of the air. These plants are designated with this term as they mainly grow in the woods, on the trunks of trees. They differ from Lawen of the water because they are removed from the trunks of the trees. The plants most commonly cited in this category are the Wique (*C. ruscifolia*), the Moltara (*Brassica camp*estre), and the Natru (*Solanum gayanum*).

Lawen of the earth. These plants have roots and woody stems and mainly grow in red clay. The most common plants in this group are the following: Kachan Lawen, Nangka Lawen (which comes from the word Nanko, meaning ''losing water''). In this category are also included the Chillum (*Ambrosia elatior*) and the Alwe Lawen (*Salvia officinalis*), which are more frequently used by the machi and little known among the rest of the population.

Wentru lawen and domo lawen (e.g., female plants and male plants). This ethnoclassification by the Mapuche makes a gender differentiation of the plant according to its morphological characteristics. For the reproduction of the plant, the presence of both components of wentru lawen and domo lawen is necessary. Among the most cited plants belonging to this group are the Lufo (*Rumex romasa*), Payco (*Chenopodium ambrosioides*), and the Miyaya (*Datura stramonium*). The therapeutical action of these plants can vary. For instance, domo lawen are generally used for feminine ailments such as menopause, gynecological problems after giving birth, and hemorrhagia. On the other hand, the wentru lawen are mostly used to cure the urinary and prostate problems of men (nuf willen).

Knowledge of Therapeutical Properties of Plants Among Younger and Older Generations

The interviews suggested that the machi are knowledgeable about a wide range of herbs and medicinal plants. Nevertheless, the field data also show that there are differences in the knowledge possessed by younger and older generations. The data show that the younger machi know and use a specific and more limited number of plants; when asked to cite the number of plants they were familiar with, the older machi indicated an average of 150. On the contrary, the younger machi indicated that they knew around 80–90 plants.

A second important point that emerged from the interviews is that some of the medicinal plants have disappeared in the local ecosystem but the memory of them still persists among the older machi. This is the particular case for the plants of Miyaya (*D. stramonium*), Kolli mamnill (*Luma apiculata*), and AKenko (*Artemisia absinthium*). There are also a few plants that are still present in the ecosystem but which have lost some of the old therapeutical uses described by the older machi.

The interviewees also emphasized that there are some plants which were introduced by the conquistadores and later by the settlers[2] that have spread very easily in the local ecosystem, such as Wingan (*Schinus polygamus*), Chukuri (*Cassia stipulacea*), and Kodokoypo (*Myoschilos oblongum*).

The phenomenon of the decrease in knowledge and utilization of some medicinal plants in the Chol Chol region may be explained by the reduction of native flora and the ecosystem changes. This decline has been accelerated by the increase of monocultures such as pine and eucalyptus, which are extensively planted and sold for commercial purposes in the Araucanía region. The alterations that have occurred in the ecosystem have thus had a negative impact on traditional medicine. The increase of unsustainable timber extraction for commercial purposes by outsiders has had a negative impact on traditional medicinal practices among the Mapuche community in the Araucanía region

(Ladio & Lozada, 2000). Finally, the introduction of some allopathic remedies such as analgesics and vitamins, the use of which has spread in rural areas, has also contributed to the abandonment of traditional medicinal practices in some areas, especially among the younger generations.

According to the data recorded in this area of study, it is revealed that the therapeutical use of local plants still remains quite common in the rural area of Chol Chol, especially among traditional healers such as the machi. This contrasts with the herbal remedies traditionally used by average families of the Mapuche communities. The latter generally use plants which have been introduced. This phenomenon could be partly explained by the fact that general and less specific knowledge of plants, such as that possessed by local Mapuche families, is more open to the incorporation of cultural influences external to the community.

In contrast, at a more specialized level, such as in the case of traditional healers, the medical tradition and cultural identity remains more connected to local plants which were originally used in the Mapuche medicine. As a consequence, the maintenance of native herbolaria traditions is more significant, both in its empirical and magical–religious aspects, among traditional healers such as machi (Table 1).

Conclusion

The study and understanding of the medicinal plants used in traditional medicine among Mapuche communities cannot be separated from their sociocultural context, since it is this aspect that ultimately gives them their therapeutic value.

Although local ecologies are important in affecting how people interact with their biological surroundings, the selection of medicines is neither merely a reflection of epidemiological patterns (Gollin, 2004) nor simply a function of the diversity and availability of ambient flora and fauna (Leonti et al., 2002).

Indigenous theories of illness demonstrate complex notions of etiology that traverse Western dichotomies such as mind–body, individual–society, culture–nature, and natural–supernatural (Izquierdo & Shepard, 2004; Ngygen, 2003). Health and well-being embrace physical, emotional, and spiritual states as well as harmony in productive, social, and environmental interactions

The data show that in the region under study, a strong tradition of medical herbolaria among the Mapuche is maintained. Despite this positive trend, a decrease can be noted in the knowledge and utilization of some medicinal plants that are mentioned by the older generations but not known or used by the younger ones. This phenomenon concerns the plants used for therapeutical purposes by both Mapuche community members as ''homemade'' remedies and the traditional healers, such as machi.

One last aspect that has emerged from the data is that it is necessary to carry out new studies exploring how the medicinal plants perform functions that go beyond their simple therapeutic uses and values. This includes preventive and diagnostic measures which complement and link the empirical and symbolic uses of medicinal plants.

In order to fully understand the therapeutic efficacy of the plants, it is necessary to comprehend the sociocultural context in which they are used. The therapeutic efficacy of Mapuche medicine is not only based on the empirical elements—or ''active agents''—but is also related to the symbolic and religious meaning attributed to the treatments by healers and patients.

Notes

1. The rewe is a tree trunk set in the ground and surrounded by canes of colihue located in rows and adorned with white, blue, or yellow flags and branches of trees. At its summit it has a representation of a human face with seven steps rising up from the earth to this summit. It symbolizes the connection with the cosmos. This

Table 1. Most Common Plants Among the Communities Interviewed

Mapuche Name	Common Name	Scientific Name	Forms of Uses	Empirical Uses	Parts Which are Used
AKenko	Ajenco	*Artemisia absinthium*	Infusion, fumigation, rubbing	Wekufu kutran, stomachache	Leaves
Loyka lawen	Alfilerillo	*Erodium circutarium*	Infusion	Bronchite, empacho	The whole plant
Kolli mamnill	Arrayan	*Luma apiculata*	Infusion	Diarrhea, dysentery, indigestion	Branches, leaves
Ngefun	Avellano	*Guevina avellana*	Cooked	nervousness	Cortex
Foldo	Boldo	*Peumus boldus*	Infusion	Gall, cough	Leaves
Kachan lawen	Cachan	*Erythraea chilensis*	Infusion	Aches in the junctions	The whole plant
Foye	Canelo	*Drimys winteri*	Rubbing, cataplasm, infusion	rheumatism, sorehead, after childbirth	Leaves
Miyaya	Chamico	*Datura stramonium*	Infusion	Eating disorders, headaches, insanity, to chase evil spirits	Seeds
Chilko	Chilco	*Fuchsia magellanica*	Infusion, cooked	Menstrual problems, abortive headache	Flowers
Chukuri	Chukuri	*Cassia stipulacea*	Infusion, cooked	Indigestion, stomachaches	branches, leaves
Filu lawen	Cola huacha	*Polifodium penillei*	Ritual object, infusion	Bronchial catarrh	Root, leaves
Kowul lawen	Copihue	*Lapageria rosea*	Infusion, rubbing	Diarrhea, wounds	The whole plant
Kodokoypo	Codocoipo	*Myoschilos oblongum*	Cooked, ash	Indigestion, vomiting	branches, leaves
Anikul kull	Cresta de gallo	*Lomaria chilense*	Infusion	Diarrhea	The whole plant
Kulle	Culle colorado	*Oxalis sea*	Infusion	Menstrual problems, cold	Flowers
Wallo	Huago	*Kageneckia oblonga*	Cooked	Nosebleed	Leaves, cortex
Wingan	Huingan	*Schinus polygamus*	Cooked	Back pain, liver pain	cortex, leaves
Nalle	Limpia plata	*Equisetum bogotense*	Infusion, cataplasm	Clean blood, kidney pain	The whole plant
Llanten	Llanten	*Plantago lanceolata*	Infusion, cataplasm	Stomachaches, anguish	Leaves
May-may likan				Ritual use	The whole plant
	Manzanilla	*Matricaria chamomilla*	Infusion	Cold	The whole plant
Panil	Matico	*Buddleja globosa*	Infusion, cataplasm	Pain of the liver	Leaves
Pelu	Mayu	*Sophora microphylla*	Infusion	Vomiting, cold	Seeds, flowers
Ngao ngao			Juice	Disinfection of the eyes	Leaves
Natru	Natre	*Solanum gayanum*	Infusion	Headaches, high blood pressure	Leaves, branches
	Ortiga	*Origanum aureum*	Infusion	Rheumatism, kidney pain	Leaves
Pugun	Peumo	*Crycosidos flavonicos*	Juice, infusion	Stomachache	Leaves
Kolew	Poleo	*Mentha pulegium*	Infusion	Nasal congestion, stomachache	The whole plant
	Toronjil dulce	*Melissa officinalis*	Infusion	Nervousness, anguish	Leaves

rehue is a symbol of great importance that is used in important celebrations such as the Machitun, Guillatun, We Tripantu (Mapuche New Year), and others.

2. Gironimo of Bibar, one of the first chroniclers, gives an idea of how early plants from abroad were introduced in Chile: "I wanted to make a list of the plants that Spain have brought to these provinces of Chile: the fennel, ruda, mustard, and turnips have become so common in the fields that you can find them almost everywhere."

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