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Northern Lacandon Maya Medicinal Plant Use in the Communities of Lacanja Chan Sayab and Naha', Chiapas, Mexico

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Abstract

The Lacandon Maya are rainforest farmers who inhabit the tropical jungles of southern Mexico and Guatemala. They number approximately 700 individuals and practice a traditional system of agriculture that incorporates introduced plants and the native flora of their environment. In this essay, we discuss a largely neglected aspect of Lacandon ethnomedicine. Our results include 47 medicinal plants used by the several Northern Lacandon living in the communities of Naha' and Lacanja Chan Sayab. The plants are cultivated in three zones (house gardens, milpas, and secondary milpas) and wild plants are collected from the jungle. This method of healing exists amid numerous alternatives and intense pressure to use Western medicine. Nevertheless, many Lacandon Maya continue to practice healing with cultivated and wild plants. In this context, Lacandon ethnomedicine represents a dynamic aspect of their culture and serves to challenge an academic model that regularly essentializes their society and predicts their imminent destruction.

Introduction

Maya Indians of Central America have been the focus of considerable scholarly attention for more than one hundred years. Researchers have studied myriad issues involving Maya archaeology, ancient life-ways, colonial history, and contemporary society. In the 1930s the anthropologist Ralph Roys wrote the seminal work on colonial Maya ethnobotany and ethnomedicine, which sparked interest in contemporary Maya folk medicine. Since the 1970s numerous Maya groups became the focus of ethnobotanical and ethnomedicinal research (Alcorn 1984; Berlin et al. 1974; Breedlove and Laughlin 2000; Orellana 1987). Lacandon Maya medicinal plant use, however, was never a focus of these studies and until recently little information existed on Lacandon ethnomedicine.

The Lacandon Maya are a small indigenous group that inhabit the jungles of southeastern Chiapas, Mexico. Although their exact origins remain a mystery, the ancestors of today's people were found in the area in the late seventeenth century and early eighteenth century (Kashanipour 2003:67-80). Because of their continued presence in the region, the

Lacandon gained exclusive land rights to valuable jungle territory in 1972 (Kashanipour 2003:148-150; Nations 1979:110). Throughout much of the twentieth century, the basis of the Lacandon economy was subsistence agriculture. Most Lacandon practiced a non-Christian religion that required frequent offerings to a pantheon of deities in order to maintain the natural environment (McGee 1990:60-74, 2002:125-152). Since the 1970s many of the Lacandon diversified their economy and abandoned the old religion. Commercialization and tourism have become important aspects of the Lacandon economy and many people today practice a mixture of subsistence farming, commercial mono-cropping, and craft production (McGee 2002:71-124).

This essay builds on introductory research presented in McGee (2002) and presents a formal discussion of medicinal plant use among Northern Lacandon living in the communities of Lacanja Chan Sayab and Naha'. Our purpose is twofold. First, we document an indigenous system of folk healing and add to the growing canon of research on indigenous

curing methods. Healing among other Maya groups, such as those in Yucatan and in the Guatemalan Highlands, involves highly trained practitioners. Lacandon healing, however, centers on self-healing. Identifying 47 medicinal plants used by groups of Northern Lacandon in two communities, we also provide information on what parts of the plants are used for therapeutic purposes and how treatments are prepared.

Second, this work counters a common trend in Lacandon studies to portray their society as decayed and eroding. Imbedded in this position is the belief that a few key features, such as religion, dress, and agriculture, define Lacandon society. When changes occurred to these areas, outsiders frequently lamented the end of Lacandon society. Typical of this position was one scholar's assertion that the Lacandon were "on the verge of cultural extinction" (Boremanse

1998:13). We wholeheartedly reject this notion and our study highlights the adaptability of many of the Lacandon. In broader terms, we hope to recast Lacandon society as a flexible institution that blends a variety of influences while still retaining uniqueness. Lacandon folk medicine exists as a practice that owes its origins to individual experimentation, traditions, and increased social interaction with other native groups. This practice stands out as a symbol of the Lacandon's constantly changing cultural practices.

Background

Locale

The Lacandon Maya inhabit a region of south-eastern Chiapas, Mexico, that is generally referred to as La Selva Lacandona (Figure 1). The area is positioned between 16° and 17° latitude north and 90°30' and 91°30' longitude east. The climate of the

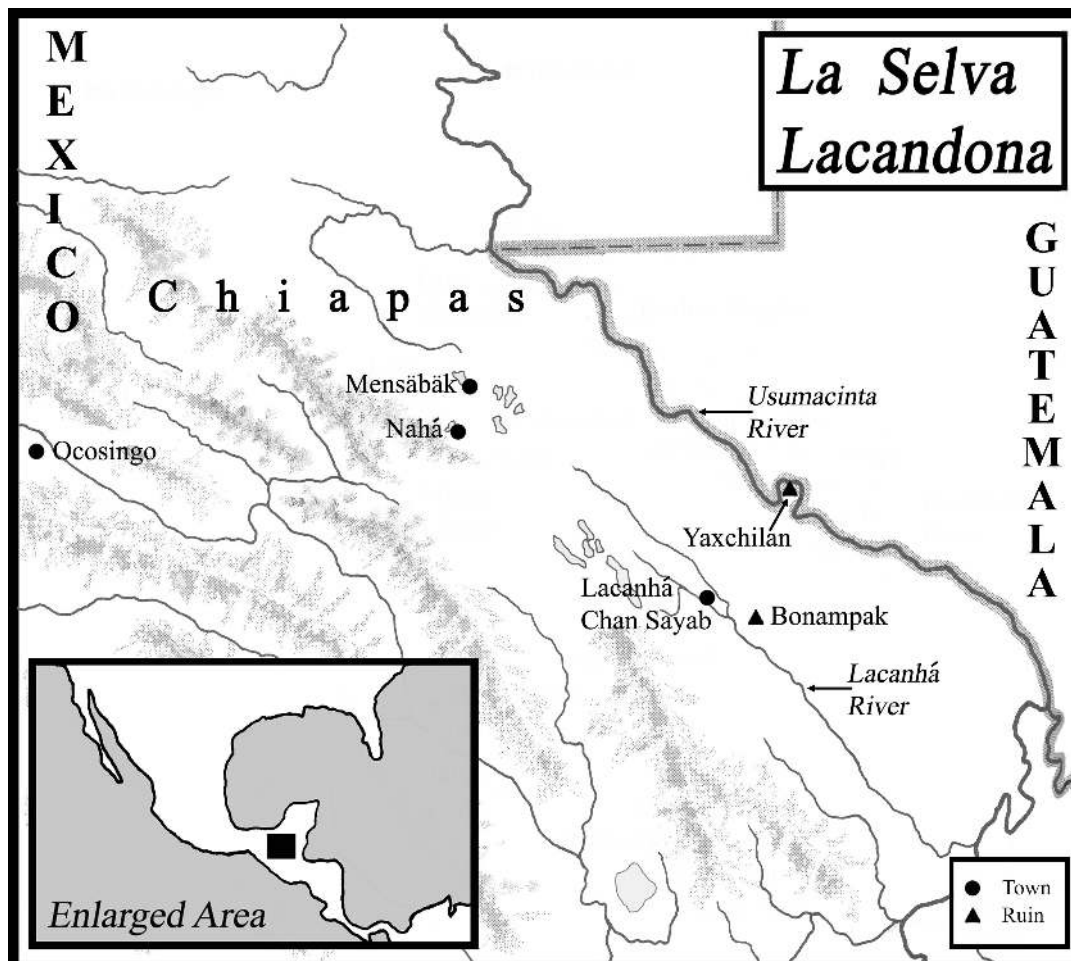


Figure 1. Location of study sites in Chiapas, Mexico.

region is warm and humid with median temperatures above 22° Celsius and an annual precipitation of over 250 cm. La Selva Lacandona is primarily tropical and montane rain forest and displays a typical three-tiered canopy of vegetation (Breedlove 1973:152-153). The upper canopy rises to 60 m with the second tier creating a continuous lower canopy at 45-60 m. The third tier creates a layer of undergrowth rising from the ground to 20 m. Common trees of the forest include breadnut (*Brosimum alicastrum* Sw.), ceiba (*Ceiba petandra* (L.) Gaertn), gumbo limbo (*Bursera simaruba* (L.) Sarg.), mahogany (*Swietenia macrophylla* King), sapodilla (*Manilkara achras* [Mill.]), trompito (*Alibertia edulis* Rich. Fosberg), and wimmeria (*Wimmeria bartlettii* Lundell).

The area contains approximately 4,000 vascular plants and about 25 percent of Mexico's species diversity (O'Brien 1998:6). In the last half of the twentieth century, however, this diversity has been severely degraded. The estimates of rainforest destruction in the last few decades range from 40 percent (O'Brien 1998:41-48) to more than 70 percent (Fuentes Aguilar and Soto Mara 1992:67-68). Our study area lies in the Montes Azules Biosphere Reserve on the edge of this destruction.

We collected information in Naha' and Lacanja Chan Sayab—the two largest Lacandon Maya communities, containing 200 and 500 inhabitants, respectively. Naha' is approximately 50 km west of the Usumacinta River, which forms the border between Mexico and Guatemala, and 55 km east of the regional capital Ocosingo. The elevation of the community is 825 m and lies in an ecosystem of montane rain forest that lacks the 60 m upper canopy that is typical of tropical rain forest. Lacanja has an elevation of 250 m and is approximately 50 km west of the Usumacinta River and 115 km southeast of Ocosingo.

While Lacanja Chan Sayab and Naha' share most flora and fauna, there are some variations between the two ecosystems. The rainy season often begins earlier in the lower regions near Lacanja and the mean yearly temperatures are lower in Naha'. These differences allow for slightly different farming practices between the two villages. Some community members in Naha', for example, grow coffee as a cash

crop, which is not feasible in Lacanja. Additionally, the jungles around Naha' have been severely deforested as logging companies have removed valuable hardwoods and new communities have converted forest into cattle pasture. In 1964 private timber companies began two decades of harvesting tropical cedar and mahogany from La Selva Lacandona. By the 1980s there were so few of the highly prized hardwoods left that Mexican-owned timber companies stripped much of the jungle of less-valued common species of trees. Between 1976 and 1992 the state of Chiapas lost between 50 and 66 thousand ha per year, mostly in the region that is home to the Lacandon (O'Brien 1998:75-82). While the Lacandon of Naha' today hold roughly 10,000 ha of the jungle, the community exists as a rainforest island within a sea of cattle pasture and degraded jungle. Lacanja exists in somewhat better circumstances. The community controls approximately the same amount of land as Naha', but the nearby jungle is relatively protected from deforestation because the community is located about ten km from the nationally protected archaeological site of Bonampak.

An Overview of Lacandon Horticulture

There are approximately 700 Lacandon Maya living in the tropical jungles of southern Mexico and Guatemala. Most individuals live in two communities: Naha' and Lacanja Chan Sayab. The Lacandon are typically divided into two groups based on cultural, geographic, and linguistic differences. Anthropologists generally identify these groups as Northern and Southern Lacandon. The Lacandon do not use these designations. As a whole they refer to themselves as **hach winik**,¹ which literally translates as "real people." Historically, the Northern and Southern groups identified differences between each other based on dress, language, and marriage practices. Men from both groups frequently clashed over wives and murder was common. Today, as both groups have increasingly taken to wearing Western clothes, speaking Spanish, and intermarrying, cultural differences have lessened.

Northern Lacandon exclusively inhabit the village of Naha' and the small community of Mensäbäk. Mensäbäk was once home to a large population, but

as protestant missionaries moved into the region, many community members resettled to Naha' and Lacanja. Today, Mensäbäk contains only a handful of people. Lacanja was traditionally a Southern Lacandon community; however, in recent years several Northern Lacandon families have resettled there. While differences in language and culture between the Northern and Southern groups continue, they share many cultural practices, including agriculture.

Today both groups of Lacandon continue to practice swidden farming. Lacandon milpas are hectare-sized fields that are cut, cleared, and burned from primary and secondary forest. Although men generally perform most milpa work, entire families often partake in planting, weeding and harvesting.

Lacandon farmers utilize four food-producing zones: primary forest (**k'ax**), cornfields or milpas (**kol**), secondary milpas (**pak che' kol**), and house gardens (**mehen kol**). They collect supplemental food from the forest, such as fruit from avocado (**on**; *Persea americana* Mill.), mamey (**haas**; *Mammea americana* L.), and ramón or breadnut (**ox**; *Brosimum alicastrum* Sw.) and raw materials that come from jungle plants such as mahogany (**puna**; *Swietenia macrophylla* King) and tropical cedar (**k'uh che'**; *Cedrela odorata* L.). Additionally, the forest is the primary source for Lacandon medicinal plants that we identified in our study.

Lacandon milpa farming is centered around the Mesoamerican cultigens of corn (**näl**; *Zea mays* L.), beans (**bu'ul**; *Phaseolus* sp.), and squash (**kum**; *Cucurbita* sp.), as well as supplemental crops of chiles (**ik**; *Capsicum frutescens* L.), manioc (**tsin**; *Manihot esculenta* Crantz), and tomatoes (**p'ak**; *Lycopersicon esculentum* Mill.). Farming is not limited to these plants, however. McGee (2002) reported over 70 varieties of plants growing in Lacandon milpas in Naha' and Lacanja. Most Lacandon actively cultivate their milpas for approximately three years, after which fields are allowed to return to jungle growth.

Overgrown milpas are never completely abandoned. Instead, they continue to be sources of food and resources. The Lacandon term for these areas, **pak che' kol**, literally means planted tree garden and

reflects their true purpose (Nations and Nigh 1980). For this reason, we refer to abandoned, fallowing fields as secondary milpas or orchards. In the first years of active milpa cultivation, Lacandon farmers plant useful and fruiting trees that take several years to mature and produce significant yields. These trees become the basis of the secondary milpa system. Once mature, these plants are regularly harvested for their fruit, leaves, sap or any other useful products. Some of these trees include **balche** (*Lonchocarpus longistylis*), banana (**box**; *Musa × paradisiaca* L.), cacao (**balam te'** or **käkaw**; *Theobroma cacao* L.), and **papaya** (*Carica papaya* L.).

House gardens are the final zone of Lacandon horticulture. Although the yields from house gardens are minimal, they represent an important area of plant cultivation. In essence, house gardens serve two agricultural roles. First, they provide a protected growth area for plants that require long-term development and maturation periods, such as coconut (**coco**; *Cocos nucifera* L.), lime (**mulix**; *Citrus aurantiifolia* (Christm.) Swingle), and orange (**chiina**; *Citrus aurantium* L.). Second, they provide an easily accessible area for supplemental and often fragile foodstuffs such as coriander (**culanto**; *Coriandrum sativum* L.), and onion (**cebolla**; *Allium epa* L.).

Lacandon agriculture is distinctive from many of their Central American counterparts in several respects. First, many Lacandon farmers grow a wide variety of crops. Some farmers cultivate over 30 different plants in a single field (McGee 2002:94-95). Second, their horticulture produces bountiful harvests. Nations and Nigh (1980) estimated that each Lacandon hectare-sized milpa yields over six metric tons of corn and other vegetable produce in each initial growing season, which was significantly higher than all other Maya groups. Finally, Lacandon agriculture incorporates forest regeneration and re-growth as essential elements of production. After several years of farming (generally from three to seven years), jungle vegetation is allowed to engulf fields and new milpas are established elsewhere. All together, this agricultural system produces a diverse landscape of cultivated plants that reaps larger yields and has shorter fallow periods than other farmers in nearby communities.

Lacandon Studies and Ethnobiology

Over the past hundred years a variety of ethnographers have worked with different Lacandon groups, but few have conducted in-depth studies of Lacandon agriculture or Lacandon use of forest resources. Alfred Tozzer, the first modern Lacandon ethnographer, worked in a small Lacandon compound in 1903 and 1904. In *A Comparative Study of the Mayas and the Lacandonas*, Tozzer (1907:21-23) described the primary responsibilities of Lacandon men as agriculture and religion, and listed some of the crops men grew in their milpas. Tozzer, however, made no mention of medicinal plants, wild or cultivated.

In the 1930s the French anthropologist Jacques Soustelle visited several Lacandon communities in southeastern Chiapas. Soustelle (1933) provided extensive physical descriptions of the people he met, their material surroundings and circumstances, and the ritual practices he was allowed to watch, but we did not find any mention of medicinal plant use in his descriptions of Lacandon life. In the 1940s and 1950s the archaeologist Franz Blom and the photographer Gertrude Duby-Blom (1955) provided the most thorough descriptions of Lacandon society to date in their two-volume study *La Selva Lacandona*. Blom and Duby, however, failed to mention medicinal plant use among the groups they visited. A decade later Duby and Blom (1969:279-280) went so far as to claim that the Lacandon had “lost the last of their knowledge of curing with local herbs” and all folk healing traditions. During the 1960s Alfonso Villa Rojas, an ethnographer typically known for his studies of the Maya of Quintana Roo, also spent some time studying the Lacandon and published an extensive ethnographic summary of what he found. Villa Rojas (1967) devoted one section of his report to agriculture but failed to report of wild or cultivated medicinal plants.

The first mention of medicinal plant use among the Lacandon was by Philip Baer and William Merrifield (1971) in *Two Studies on the Lacandonas of Mexico*, which was based on fieldwork from Lacandon villages during the mid-1950s. Baer and Merrifield provided an extensive discussion of the wild and cultivated plants used by the Lacandon, but only

one plant, wild clove (**pesa**; *Eugenia caryophyllata*), was reported as a medicinal (Baer and Merrifield 1971:217).

In the 1970s James Nations and Ronald Nigh conducted a thorough examination of Lacandon milpa agriculture in the community of Mensábak. Their findings included extensive lists of cultivated plants and wild flora. These lists contain references to medicinal plants but no discussion of how the plants were used to treat infirmities. The medicinal plants identified by Nations and Nigh that were cultivated in milpas or protected in fallowed milpas were castor bean (**chäk k'och**; *Ricinus communis*), fennel (**tz'ak hamneh**; *Foeniculum vulgare*), ginger (**pap u wi**; *Zingiber* sp.), and goose foot (**k'oshesh**; *Chenopodium ambrosioides*).² Nations and Nigh (1980) listed six more plants gathered wild from the forest. These are amate (**moak te'**; *Ficus* sp.), annona (**op ak'**; *Annona cherimoya*), the chimon tree (**chukun**; *Croton draco*), wild dogbane (**tuch**; *Ficus* sp.), talauma (**kuti**; *Talauma mexicana*), and, like Baer and Merrifield twenty years before, wild clove.

One of the most recent listings of plant species used by the Lacandon is a 1998 report by Ignacio March. In this report he lists only four species of uncultivated medicinal plants, amate (*Ficus* sp.), flor de corazón (*Talauma mexicana*), ricino (*Ricinus communis*), and zarzaparilla (*Smilax* sp.). March identifies no cultivated medicinal plants in this report nor does he describe the ailments these plants are used to treat.

Given the fact that the Lacandon have an intimate knowledge of their local flora and fauna, it is quite curious that so few authors have commented on Lacandon medicinal plant use. For the greater part of the past three hundred years they have been relatively isolated from Western cures and medicine while other Maya groups with access to medicine have held on to traditional folk healing. It may be true that the Lacandon may not have used medicinal plants historically—just as Blom and Duby stated. Nevertheless, the lack of documentation for ethnomedicine use does not necessarily mean the Lacandon were not using such plants, only that observers may have failed to witness, recognize or report the practice.

Until the 1970s few scholars spent extensive periods of time living in Lacandon households. Blom and Duby, for example, had their own living quarters on the opposite side of the lake from the village of Naha'. Since other forms of Lacandon folk healing such as therapeutic incantations and curing strings are non-ritualized (David 1978: 46; McGee 2002:157), the use of medicinal plants would have been easy to overlook by researchers interested in traditional religion. Furthermore, most Lacandon rarely offer information that is not specifically asked about. Because most individuals studying the Lacandon until the 1970s were primarily interested in religion, the topic of medicinal plant use may not have arisen.

Healing Rituals, Disease, and Western Medicine

Throughout much of the twentieth century, the Lacandon Maya were one of the few non-Christianized groups in Mexico to maintain an indigenous religion. This uniqueness brought them considerable attention and spawned numerous academic works (Davis 1978; Duby 1944; McGee 1990; Tozzer 1907). Their religion was polytheistic and many anthropologists emphasized similarities with pre-Columbian practices (Bruce 1976-77; McGee 1984; McGee and Reilly 1997; Tozzer 1907). Lacandon rituals focused on two classes of ritual devoted to agriculture and healing. Agricultural ceremonies were seasonal crop maintenance rituals performed to ensure bountiful harvests. In essence, these rituals were preventative, unlike those focused on healing. Healing rituals were not tied to the seasons and were performed on an irregular basis. They were generally aimed to placate angry gods and alleviate specific symptoms after individuals were struck ill (McGee 1997).

Nations (1979:139-152) and McGee (2002: 154) recognized that the Lacandon sort illnesses and ailments into several symptom-based classes. Gastro-intestinal ailments are typically referred to by three terms: general stomach pain (**chibal hämnen**), diarrhea (**huibil hämnen**), and nausea (**xeh**). Respiratory sicknesses with cold or flu-like symptoms are referred to as **tsem**, while upper respiratory infections, including coughing mucus and coughing blood, are called **säk tsem** and **tsem**

k'ik'el, respectively. General aches and pains are designated as **yahil** and specific aches are typically referred to by compound phrases such as backache (**yah in pach**), bone ache (**yah baak**), and headache (**yah in ho'ol**). Toothaches are termed **chibal koh**. Finally, dermatological ailments, such as rashes and swelling, are called **k'ak'il**, which literally translates as "something is on fire" (McGee 2002:154).

The most obvious Lacandon healing rituals involved therapeutic incantations and the use of hand-spun curing strings. Numerous ethnographers who have worked with the Lacandon have commented on these rituals and Davis (1978), Boremanse (1979) and McGee (2002) provide thorough discussions. Because the use of medicinal plants was apparently not ritualized, their use escaped the notice of most researchers and has been virtually ignored by most scholars and the literature on the Lacandon. In 1996, however, McGee discovered by accident that several Lacandon in Naha' were using wild and cultivated herbs as medicine, which became the impetus for research presented here. However, unlike previous works, which only listed the plants that some Lacandon use for therapeutic purposes, we have attempted to go further by examining what parts of the plants are used and how they are prepared for therapeutic treatments.

It is important to note that in the last several decades Lacandon society has undergone immense change. In the 1970s the Mexican government created a national preserve and granted the Lacandon land ownership. Many Lacandon congregated into large communities and the government built school buildings, state-funded stores, and medical clinics. In the 1980s and 1990s the death of several religious elders and an influx of Christian missionaries ended the practice of traditional Lacandon religion. As these changes occurred, numerous scholars, activists, and tourists publicly predicted and, in some cases, eulogized the end of Lacandon culture (e.g., Boremanse 1993; Girven 1983; and Gregory 1994).

In the 1980s increased wealth (largely caused by increased tourism), the founding of rural medical offices in Lacanja Chan Sayab and Naha', and the creation of a medical fund by the non-profit organization *Asociación Cultural de Na Bolom* made advanced

medicine accessible to many of the Lacandon. By the late 1990s the Lacandon regularly traveled to the towns of Palenque and San Cristóbal de las Casas for medical care. Pregnant women often left their homes late in their pregnancies to deliver their children in hospitals. Individuals with tooth problems commonly visited dentists and it is now quite common to see gold-capped teeth in Lacanja.

Today, the Lacandon have a host of medical options available to them. Community clinics care for minor and immediate needs, while hospitals and specialists in nearby cities handle more serious issues. Lacandon herbal healing, therefore, exists amid access to a variety of other medical options.

Methods

We gathered information in month-long periods beginning in May 1999 and concluding in October 2001 for a total of twelve weeks. We spent ten weeks in Lacanja working among a multi-generational Lacandon family compound that consisted of about 60 individuals. Approximately 94 percent of the plant species reported in this essay were collected in Lacanja with the help of older men of the compound. We researched in Naha' for two weeks among one household. Informants ranged in age from approximately 12 to 70 years old. Sixty-seven percent of the informants were male and 33 percent female.

We gathered data through participant observation and through formal and informal interviews. Because many of our informants, particularly those in Naha', do not speak Spanish, all of our discussions took place in their native tongue. Formal interviews involved two phases. First, we questioned Lacandon men and women within their home or house compound about general botanical and illness-related issues. Generally, we asked individuals if they had been ill lately, if they knew of medicinal plants, or if they had recently used medicinal plants. Approximately 70 percent of all individuals queried at this level responded that they knew of or used medicinal plants. Many people, however, were reluctant or unable to point out these plants specifically. Second, we asked responsive individuals to locate and identify medicinal plants. Informal interviews generally occurred spontaneously, when individuals offered

information voluntarily, without specific questioning. This occurred often while hiking through the jungle, working in the milpa, or in one case, when one researcher was ill.

Plant information was gathered relating to the identification of plants (growth type and unique characteristics), vernacular names (both Lacandon and Spanish), location (house garden, milpa, secondary milpa or jungle), parts used, medicinal uses and remedy preparation. We dried and identified specimens at Texas State University - San Marcos. Several sources aided specimen identification, such as *Animals and Plants of the Ancient Maya* (Schlesinger 2001), *Flora of Chiapas, I-IV* (Breedlove 1981), *Tropical Mexico* (Beletsky 1999) and *La Vegetación de Chiapas* (Miranda 1952). The Germplasm Resources Information Network (www.ars-grin.gov) provided confirmation of common names and scientific nomenclature. We were unable to identify several plants because a few of our samples lacked taxonomic characteristics (fruit and flowers).

Results and Discussion

Forty-seven medicinal plants obtained from fieldwork in Nahá and Lacanja Chan Sayab are reported in Appendices 1 and 2. Appendix 1 lists 35 taxonomically identified plants with scientific information, and Lacandon, English and Spanish names. Appendix 2 lists 12 unclassified species according to Lacandon names. Both appendices list growth location, medical indication, part(s) used, treatment form, preparation, and dosage.

Medicinal plants are found in the same four areas used for agriculture: primary forest (**k'ax**), secondary milpas (**pak che' kol**), milpas (**kol**), and house gardens (**mehen kol**) (Figure 2). We collected 32 species (68%) from the jungle and the remaining 15 species (32%) in the three Lacandon cultivation zones. Seven plants (15%) are grown in milpas, five plants (11%) are cultivated in house gardens, and three plants (6%) are found in secondary milpas.

There are 19 species used to treat general aches and pains, such as muscle/bone ache (**yah baak**), and toothache (**chibal koh**), or factors that cause pain such as inflammation (**k'ak'il**) and fever (**chäk wilil**). Treatments for gastro-intestinal

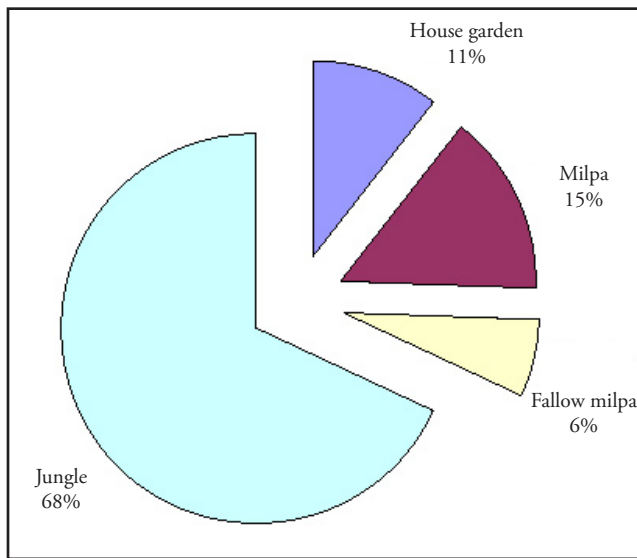


Figure 2. Lacandon medicinal plant habitats.

ailments account for the second greatest number of remedies and total 16 species. Within this category, ten remedies cure general stomach pain (**chibal hamen**), six plants target diarrhea (**huibil hamen**) and one plant alleviates symptoms of nausea (**xeh**). Animal bites also account for a sizable portion of our total sample. Eight distinct plants are used to counteract snakebites (**chibal kan**) and insect bites. Other infirmities treated with herbal remedies are coughing blood (**tsem k'ik'el**), eye irritation, and bedwetting, each of which is healed with two plant remedies. Nine plants treat multiple ailments or illnesses. In general, these remedies target similar symptoms, such as toothaches and headaches. Table 1 provides a complete list of ailments along with the number of remedies.

Vegetal cures generally take two forms: unaltered, crude modes of the original plant or liquefied teas or decoctions. The one notable exception is hierba santa (**säk hoben**; *Piper umbellatum* L.), which is used to treat inflammation by blistering leaves over an open flame and wrapping them around the irritated area. Unaltered remedies involve little, if any, preparation. Leaves are simply eaten, bark is chewed, or sap is drained. The stalk of guatipil palm (**pahok**; *Chamaedorea* spp.), for example, is used to reduce fever and, as one informant claimed, to prevent malaria. A one-inch piece of the stalk is skinned and the inner pith is eaten one time per week. Two

informants report eating five to ten leaves of the Jamaican cherry (**puham**; *Muntingia calabura* L.), which are picked by the handful and eaten raw to treat stomach pain. These forms of remedies account for 45 percent of the cures in our samples. Fifty-three percent of the treatments, however, involve a process of distilling or soaking.

Decoctions are prepared by boiling the desired plant parts in large quantities of water for long periods of time. For example, chronic stomach pain is treated with a warm decoction made from the leaves of allspice (**pimienta**; *Pimenta dioica* L. Merr.). The remedy is prepared by soaking or boiling the plant's leaves for three days and then consumed in one-half gallon (2.27 l) doses until the pain ends. Teas, often produced in smaller quantities, are prepared as quick remedies and generally involve briefly soaking leaves or bark in cool water until the color of the water changes. Several informants treated

Table 1. Lacandon ailments and number of remedies.

Ailment	Lacandon Name	Number of Remedies
anemia	—	1
asthma	—	1
bedwetting	—	2
bone ache	yah baak	4
coughing blood	säk k'ik'el	2
coughing phlegm	säk tsem	1
diabetics	—	1
diarrhea	huibil hämnen	6
eye irritation	—	2
fever	chäk wilil	5
headache	yah in ho'ol	1
inflammation	k'ak'il	2
insect bites	—	4
irritated skin	—	1
lip irritation	—	1
nausea	xeh	1
nervousness	—	1
pain	yahil	1
snakebite	chibal kan	4
stomachache	chibal hämnen	10
toothache	chibal koh	2
worms	—	1

stomach pain with a tea made from cold water and the bark of red sapote (**chäk kax**; *Manilkara zapota* (L.) P. Royen). In another example, several Lacandon use the leaves of the trumpet tree (**k'och**; *Cecropia peltata* L.) to cure a wide variety of symptoms including chills, fatigue, and general listlessness. Remedies are prepared by soaking five to ten crushed leaves in cool water. The liquid is imbibed in small doses until the symptoms diminish.

The most commonly used plant parts are leaves, which are included in 53 percent of the cures (Figure 3). Sap and bark account for the second largest percentage with 17 and 16 percent of the remedies, respectively. Compound remedies involving multiple plant parts account for ten percent of the cures. Roots and stalks are used infrequently and only account for six and four percent of the total cures.

The administration of medicines varies according to the ailments treated. Gastro-intestinal sicknesses are exclusively cured internally, as are respiratory illnesses. The sap from cat's claw vine (**kansak'**; *Uncaria tomentosa* (Willd. ex Schult.) D.C.), for example, is ingested to treat stomachache. Likewise, the boiled roots of ginger (**ah sensi**; *Zingiber officinale* Roscoe) are administered orally to treat excessive mucus and coughs. Conversely, animal bites are nearly all exclusively treated externally and locally. Common methods involve applying moistened leaves or bark from plants such as amate (**amäk wäm**; *Ficus maxima* Mill.) and Central American magnolia (**kul ak'**; *Magnolia mexicana* D.C.) to the irritated region. The lone exception is a decoction created from the roots of an unidentified jungle plant (**op ak'**) used to treat snakebite. Similarly, all dermatological afflictions, including inflammation and lip irritation, involve external dressings and usually involve bark, leaves or sap.

Self-healing is the typical practice, but a few individuals report preparing cures for children or siblings. None of our informants reported any formal training in medicine or healing. In fact, few of our informants could identify when and where they learned specific cures. Therefore, our data on the transmission of remedies is quite general. All of our informants maintained that most medicinal

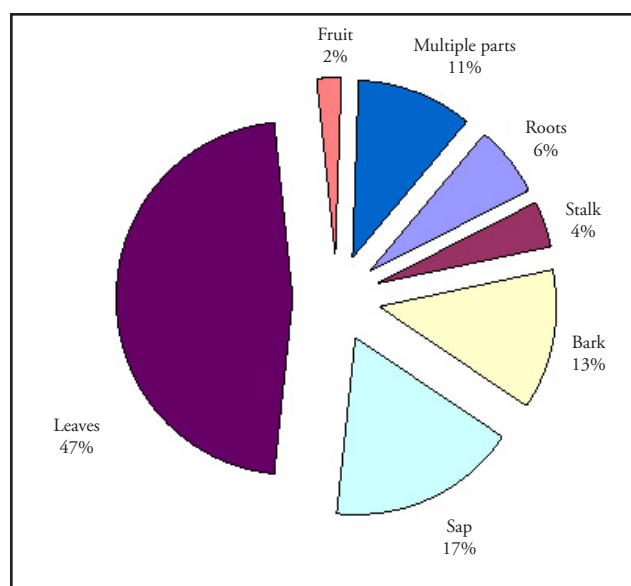


Figure 3. Plant parts used in Lacandon medicinal treatments.

plant knowledge came through three sources: family knowledge, experimentation, and interaction with other native groups. The transfer of herbal remedies from one family member to another generally took place informally and typically when illness occurred. Simply stated, when individuals were ill other family members offered remedies. The youngest of our informants reported that they learned herbal remedies while working with parents and older siblings.

Experimentation represented another key means to acquire plant knowledge. Individuals simply tried different remedies to alleviate nagging symptoms. One individual reported that when plagued by lung irritation, he simply tried the juice from sweet smelling plants from his milpa. He settled on the juice of **mulix** (*Citrus aurantiifolia* Swingle) because it seemed to work the best. As a whole, most experimentation came from jungle plants. One individual reported regularly trekking into the jungle to try plants to lessen back pain.

The Lacandon regularly interact with nearby Maya groups. In Naha' and Lacanja, Tzeltal-speakers are regularly employed as extra labor. One of our informants in Lacanja confirmed that he learned a few cures from neighboring individuals. These herbs were all cultivated in the milpa.

Conclusion

Lacandon herbal healing exists amid a variety of other medical resources. The traditional religious methods of healing have been replaced by Christian beliefs and Western medicine. The Lacandon living in Nahá and Lacanja Chan Sayab regularly visit local clinics and nearby hospitals. Nevertheless, the Lacandon also practice a non-religious system of healing to treat chronic ailments and infectious illnesses. Their ethnomedicinal system incorporates cultivated plants, introduced species, and native flora.

Lacandon medicinal plants are extracted from four zones. Three zones are sites of active cultivation and one is the source of wild, native, or naturalized plants. Cultivated medicinal plants are grown in Lacandon milpas, house gardens and secondary milpas and account for one-third of the total plants described in this study. The jungle is the most significant zone for Lacandon medicinal plant growth and two-thirds of our samples were gathered there.

Remedies generally occur in two varieties: crude, raw forms of the useful plant part and liquified teas and decoctions. Crude remedies are often used to treat temporary ailments, such as stomach pain and muscle ache. Teas and decoctions are prepared to cure a variety of problems, especially protracted or chronic illnesses such as asthma and diarrhea. Leaves are the most frequently used plant part and are included in 53 percent of the remedies. Bark and sap are ingredients in 30 percent of the cures. Fruit and stalks are the least utilized plant parts and only account for six percent of the medicinal components.

Five of the plants gathered in our survey match those reported upon by previous scholars. Like Baer and Merrifield and Nations and Nigh, we found that wild cloves (**pesa**; *Eugenia caryophyllata* Thumb.) were used to cure stomach pain. Amate (**amák wäm**; *Ficus maxima* Mill.), annona vine (**op ak'**; *Smilax* sp.), ginger (**ah sensi**; *Zingiber* sp.) and goose foot (**k'oshesh**; *Chenopodium ambrosioides* L.) all corresponded with Nations and Nigh findings in 1980.

The exact origins of Lacandon medicinal plant use are unknown. Dale Davis (1978:37) noted that the northern Lacandon in Naha' attributed some of their knowledge of medicinal plants to the Tzeltal-speakers who lived in nearby communities. One

of our informants confirmed that this was at least partially true. He claimed that he learned some cures, particularly those that he cultivated in his milpa, from nearby Indians. He went on to state, however, that he learned most cures, especially those extracted from plants found growing in the jungle, from his father, who likewise inherited them from his father. It is still unclear how much of Lacandon herbal healing is the product of rapid development or increasing revitalization. This is an area ready for future research.

In addition to the detailing of Lacandon herbal medicine, our study demonstrates two important issues. First, herbal plant use is a part of the Northern Lacandon's complex interaction with their natural and cultural surroundings. Drawing on their natural environment, the Northern Lacandon cultivate cures in their house gardens, milpas and fallow fields. They also readily utilize jungle resources. One can hardly imagine a novice of the jungle experimenting with wild plants without risking their immediate and even long-term health. Nevertheless, many of our Lacandon informants use their knowledge of the jungle flora to develop cures. The Northern Lacandon cultural environment requires interaction with a variety of groups, including other native groups. In this context, cures come through familial relations and exchanges with their neighbors.

Second, in spite of the disappearance of traditional religious cures and the influx of Western medicines in Lacandon communities, many Northern Lacandon actively use folk remedies. This issue specifically demonstrates an important issue—Northern Lacandon culture is not in decline. While Lacandon traditional religion has disappeared, Lacandon society has not. The presence of folk medicine demonstrates one vibrant and unique area of their culture. Unlike other native groups, they employ no highly trained practitioners. Numerous ethnographers noted the relatively egalitarian nature of Lacandon society (Boremanse 1998; McGee 1990; Perera and Bruce 1982); herbal healing among the Northern Lacandon continues to demonstrate this. Their medicinal plant knowledge is not limited to gender, as both men and women use healing herbs, nor is it limited to age, since all age groups employ healing herbs.

The Lacandon living in Lacanja Chan Sayab and Naha' benefit from access to a variety of Western medicines. Nevertheless, medicinal plant use is vibrant and alive in these communities. Today's practitioners blend old farming practices with new ecological knowledge, family knowledge with individual learning, and foreign cures with Lacandon treatments. Medicinal plant knowledge is one area that demonstrates the resilience and flexibility of the living Lacandon.

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Notes

¹ Lacandon terms are noted in bold font. Our orthography and transcription of Lacandon generally follows Spanish vowels and English consonants. Lacandon vowels are transcribed as the Spanish a, e, i, o, u, and an additional sixth vowel of ä, which sounds like the English vowel in the word cut. Consonants follow a pattern similar to English with a few modifications. The letter x represents a sound similar to the English sh, as in the English word shut. In Lacandon, the sounds for r and l are interchangeable and they are identified in this essay solely by the letter l. An apostrophe (') represents a glottal stop.

² Nations and Nigh identify goose foot as **k'oshesh**; however, our informants identify it as **kach ech**.

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Appendix 1. Taxonomically Identified Medicinal Plants of the Lacandon Maya.
Family

Scientific taxon						
Lacandon name						
English Common Name		Medical	Part(s)			
Spanish Common Name	Location	indication	used	Form	Preparation	Dosage
Anacardiaceae						
<i>Metopium brownei</i> (Jacq.) Urb. Che' chen Poisonwood Chechem	Jungle	Eye irritation	Sap	Crude	Bleed sap from the base of the tree	Wash eyelids with sap
Apocynaceae						
<i>Aspidosperma</i> spp. Sayuk ? Bayo	Jungle	Diarrhea	Bark	Decoction	Boil bark	Drink decoction 3 times daily until symptoms subside
Araceae						
<i>Xanthosoma</i> spp. Makulim Elephant ear Yautia	Milpa	Pain Muscleache	Leaves	Decoction	Boil leaves	Drink decoction; apply leaves to irritated area
Areaceae						
<i>Chamaedorea</i> spp. Pahok Guatipil palm Guatipil	Jungle	Fever Malaria	Stalk	Crude	Cut 1 inch of stalk and remove white pithe	Eat pithe once per week
Asteraceae						
<i>Artemisia</i> spp. Tsak ti tsem Sagebrush Estafiate	Milpa	Stomachache	Leaves	Crude	None	Eat a handful (5-10) of leaves

Appendix 1 (continued)

Burseraceae

<i>Bursera simaruba</i> (L.) Sarg. Chäkla West Indian-birch Palo mulato	Jungle	Stomachache	Bark	In cold water	Soak bark in cold water	Ingest liquid
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Chenopodiaceae

<i>Chenopodium ambrosioides</i> L. Kach ech Wormseed Epazote	Milpa	Worms	Leaves	Crude	None	Ingest 5-10 leaves
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Chrysobalanaceae

<i>Licania platypus</i> (Hemsl.) Fritsch Säk'atz Sansapote Sonza	Jungle	Stomachache	Leaves	Decoction	Boil leaves	Ingest 3 cups of liquid for 5 consecutive days
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Fabaceae

<i>Arachis hypogaea</i> L. Kakawat Peanut Cacahuate	Milpa	Stomachache	Leaves	In water or Decoction	Soak or boil leaves for two days	Ingest 1 cup of liquid
<i>Erythrina coralloides</i> L. Kanti ak' Naked coral tree Colori'n	Jungle	Diarrhea	Bark and sap	Crude	Drain sap from 2 inches of bark	Chew bark and ingest sap
<i>Inga</i> spp. Bitz ?	Jungle	Stomachache	Leaves	Crude	None	Ingest 5-10 leaves
Shimbollo <i>Paulina pinnata</i> Ma'ax ak' ?	Jungle	Fever	Stalk and leaves	In water	Soak stalk and leaves in water	Ingest liquid until symptoms subside
Escalero						

Appendix 1 (continued)

Liliaceae

<i>Allium sativa</i> L. Xu'u Garlic Ajo	House garden	Diarrhea	Stalk	Decoction	Boil stalk	Ingest 3 cups of liquid per day until symptoms subside
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Magnoliaceae

<i>Magnolia mexicana</i> DC. Kul ak' Magnolia ?	Jungle	Insect bites	Sap	Crude	Bleed sap from the base of the vine	Apply sap to irritated area
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Meliaceae

<i>Cedrela odorata</i> L. K'uh che' Mexican cedar Cedro	Jungle	Insect bites Irritated skin	Leaves	Crude	Moisten leaves by chewing	Wrap leaves around irritated areas
<i>Swietenia macrophylla</i> King Puna Mahogany Caoba	Jungle	Fever Toothache	Fruit	Decoction	Boil fruit	Ingest fruit Rub fruit on gums

Moraceae

<i>Ficus maxima</i> Mill. Amäk wäm ? Amate	Jungle	Snakebite	Leaves	Crude	Moisten leaves by chewing	Apply leaves to snakebite
<i>Ficus</i> sp. Tsak tsakah che' ? ?	Jungle	Lip irritation	Bark and sap	Crude	Cut 1 inch of stem	Rub bark and sap on gums

Myrtaceae

<i>Pimenta dioica</i> L. Merr. Pimienta Allspice Pimenta	House garden	Stomachache	Leaves	In water or Decoction	Soak or boil leaves for three days	Ingest 1/2 gallon of liquid
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Appendix 1 (continued)**Myrtaceae (con't.)**

<i>Eugenia caryophyllata</i> Pesa Wild clove Clavo de olor	Jungle	Diarrhea	Leaves	Decoction	Boil leaves	Ingest liquid until symptoms subside
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Passifloraceae

<i>Passiflora edulis</i> Sims Chäk ak' Passion fruit Cabeza de mico	Fallow milpa	Insect bites	Bark	Crude	Moisten bark by chewing bark	Apply bark to irritated area
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Piperaceae

<i>Piper umbellatum</i> L. Säk hoben Piper Herbia santa	Fallow milpa	Pain Swelling	Leaves	Heated over flame	Heat leaves over an open flame until they blister	wrap leaves around irritated areas
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Ranunculaceae

<i>Clematis</i> spp. Nikte' ak' Clematis Palo santo	Jungle	Boneache/ Muscleache	Bark	Decoction	Boil bark	Ingest 1 - 2 cups of liquid until symptoms subside
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Ruatceae

<i>Citrus aurantiifolia</i> (Christm.) Swingle Mulix Lime Limón	House garden	Coughing blood Asthma	Fruit and leaves	Juiced + Decoction	Boil 5-10 leaves with the juice of 4 limes and honey	Ingest liquid until symptoms subside
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Rubiaceae

<i>Unacaria tomentosa</i> Kansak' Cat's claw Una de gato	Jungle	Diarrhea	Sap	Crude	Draw sap from a 5 inch stem	Ingest sap
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Appendix 1 (continued)**Sapindaceae**

<i>Sapindus saponaria</i> L. Bäbä Mexican soapberry Jaboncillo	Jungle	Inflammation	Sap	Crude	Bleed pea-sized amount of sap from stem	Apply sap to irritated area
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Sapotaceae

<i>Chrysophyllum mexicanum</i> Brandege ex. Standl Chi ke' Star apple Caimito	Jungle	Fever Boneache/ Muscleache	Leaves	Crude	none	Ingest 5-10 leaves
<i>Manilkara zapota</i> (L.) P. Royen Chäk kax Red sapote Zapote	Jungle	Toothache Headache	Bark	Crude	None	Rub bark on gums

Smiliaceae

<i>Smilax</i> spp. Op ak' Salsaparilla Annona	Jungle	Snakebite	Sap	Crude	Drain sap	Apply sap to irritated area
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Tiliaceae

<i>Muntingia calabura</i> L. Puham Jamaican cherry Nigua	Fallow milpa	Stomachache	Leaves	Crude	None	Ingest 5-10 leaves
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Verbenaceae

<i>Lantana</i> spp. Chäk chop Lantana Lantana	Milpa	Nervousness Bedwetting	Leaves	Crude	None	Ingest leaves immediately before sleeping
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Vitaceae

<i>Vitis</i> spp. Ah thus Wild grape Uva	Jungle	Coughing blood	Root	Decoction	Boil roots	Ingest decoction
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Appendix 1 (continued)

Zingerberaceae

<i>Costus speciosus</i> (J. König) Sm. Päsak Wild ginger Jengibre	House garden	Eye irritation	Sap	Crude	Cut stalk and drain sap	Apply sap directly to eyes
<i>Zingiber officinale</i> Roscoe Ah sensi Ginger Jingebre	House garden	Stomachache Coughing phlegm	Root	Mashed + Decoction	Crush and boil 2 roots	Ingest liquid and roots

Appendix 2. Taxonomically Unidentified Medicinal Plants of the Lacandon Maya.

Lacandon name	Location	Growth type	Medical indication	Part(s) used	Form	Preparation	Dosage
Akle xu	Jungle	Vine	Anemia	Leaves	Decoction	Boil leaves	Ingest 1 cup of liquid for 3 consecutive days
Chek ah	Jungle	Tree	Boneache/ Muscleache	Leaves	Decoction	Boil leaves	Ingest 1 cup of liquid daily for one month
Ches ke'	Milpa	Shrub	Boneache/ Muscleache	Leaves	Decoction	Boil leaves	Ingest 1 cup of liquid before sleeping
Kän sehak	Jungle	Tree	Nausea	Sap	In water	Dissolve sap into 1 cup of water	Ingest liquid and sap
Kuch nok	Jungle	Shrub	Insect bites	Leaves	Crude	None	Wrap leaves around irritated areas
Lol k'in	Jungle	Tree	Diarrhea	Bark	Decoction	Boil bark	Ingest liquid 4 times daily for 2 consecutive days
Mäk' ulami k'ax	Jungle	Tree	Stomachache	Leaves	In water	Soak leaves until water turns green	Ingest 1 cup of liquid 3 times daily for 5 days
Mäkuläm	Milpa	Tree	Snakebite	Sap	Crude	Drain sap	Apply sap directly to bite
Sak'un	Jungle	Shrub	Snakebite	Root	Decoction	Boil roots	Ingest 1 cup of liquid 3 times daily until symptoms subside
Ton k'uk	Jungle	Tree	Fever	Leaves and fruit	In water or decoction	Soak or boil leaves for 3 days	Ingest 1 cup of liquid
Tsaka cho che'	Jungle	Vine	Stomachache	Leaves	In water or decoction	Soak or boil 5 leaves	Ingest 3 cups of liquid per day until symptoms subside
Yoch bach	Jungle	Tree	Bedwetting	Leaves	In water	Soak a handful of leaves in water	Bathe baby before bedtime for 3 nights