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Knowledge about medicinal plants held by the inhabitants and traditional practitioners of the village of Mazateupa, Nacajuca, Tabasco, Mexico

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Abstract

The application of herbs for natural healing requires limitless wisdom, discernment and understanding of the natural order of the universe. The good use of our natural resources could solve economic, health and cultural problems, as they are one of the most felt needs in the communities of Mexico and Tabasco. In this sense, the main interest of this research is to analyze the traditional knowledge of the medicinal flora in Mazateupa, Tabasco. The methodology applied is a model of ethnobotanical methodology. Informants were selected and worked with using the snowball technique. Six people were interviewed in the community and 122 species were recorded. Fifty-two percent are herbs. On the other hand, 100 conditions were recorded, however, ten are the most common. There are many conditions that can be treated with different plants, although they are often used alone. There are many conditions that can be treated with different plants, although they are often used alone. Most of the plants, although medicinal, are also used as ornamental plants. This concludes that in the village of Mazateupa, traditional medicine persists.

Keywords: Chontal; Ethnobotanical; Illnesses; Mazateupa

1. Introduction

Throughout history, civilizations have moved around plants, becoming the living beings that have had the greatest influence on humanity. This is why the search for medicinal, narcotic or aphrodisiac species increased with the appearance of colonialism and the European discovery and conquest, having to search even in the most remote places [1].

As a result, the importance of medicinal plants has become even more apparent today, especially in developing countries. In Pakistan, for example, an estimated 80 % of people depend on them for their health, and 40 % in China. In technologically advanced countries such as the United States, it is estimated that 60 % of the population regularly use medicinal plants to combat certain ailments. In Japan, there is more demand for medicinal plants than for patent medicines [2].

Many people today have had experiences with their grandmothers' recipes for headaches, malaise, menstrual irregularity, nausea, nosebleeds, shoulder pain and other symptoms. As the practical wisdom of the grandmother and the use of herbs (both for internal use and for external use with compresses or plasters) can often achieve a quick solution of the problem [3].

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In view of this situation, medicinal plants play and have played throughout the history of humanity an important role in the solution of a considerable number of immediate health problems, so that their study, systematization and application of the knowledge generated in the various disciplines that carry out research in this field are indispensable, given the urgent demand of the population.

For this reason, the inhabitants and traditional doctors of the Mazateupa village in the municipality of Nacajuca, Tabasco, have dedicated time of their lives to make use of the medicinal plants of their community, especially at times when there are no doctors in the community.

2. Material and methods

The methodology applied is a model of Ethnobotanical methodology [4], which consists of obtaining as much information as possible from the population through their participation in the data collection stage.

The first phase of the fieldwork consisted of visiting the different study areas to get to know the communities. Subsequently, the local authorities of the communities to be studied were asked for permission to interview the people, and in the request, the intention of the research, the objectives and the details of the activities to be carried out were explained to the delegate. We then began to select the informants with whom we worked using the snowball technique [5], which consists of selecting an initial or basic sample of individuals and establishing at each interview which new people from the study population are to be interviewed, to make up the complete sample.

The first conversations with the informants were developed in accordance with [6], where the interest was to approach the meaning of the actions observed to get closer to the everyday interpretations made by the people.

An inventory of the medicinal plants used in the study area was drawn up and presented in alphabetical order by common name, scientific name and family to which they belong.

Finally, the forms of use and preparation of the medicinal plants were obtained from the information gathered from the surveys applied to each of the knowledgeable people.

2.1. Study area

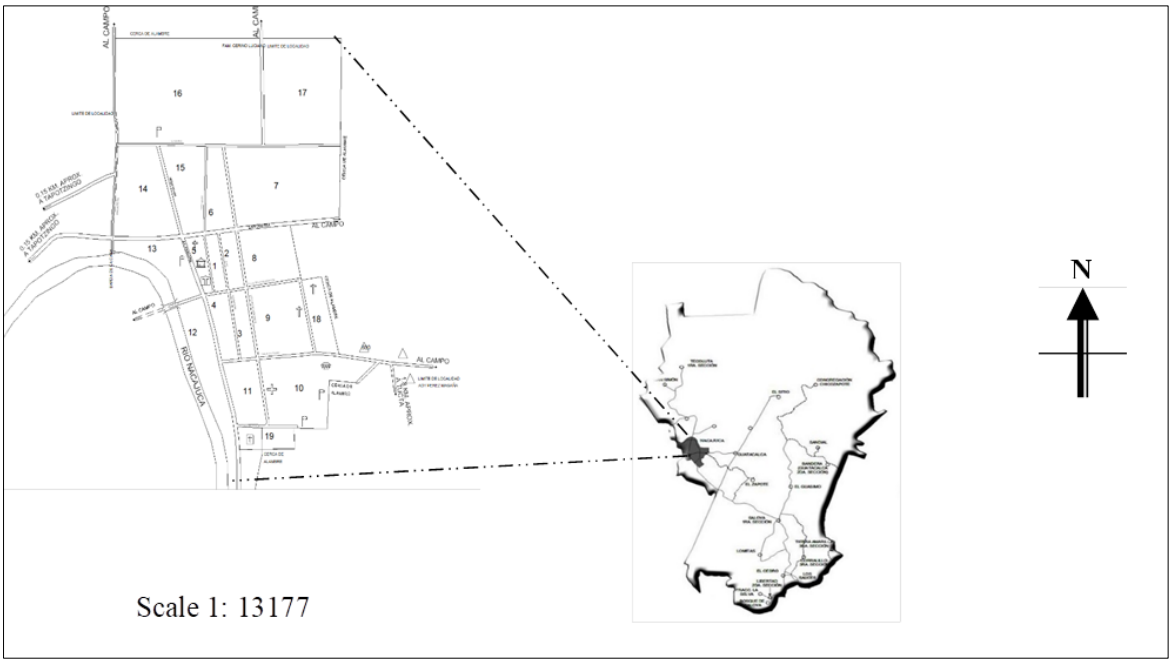
Mazateupa belongs to the municipality of Nacajuca, it is located at 18° 12‘19” north latitude and 93° 00’ 36” west longitude (Figure 1), it is located at Kilometer 4 of the Nacajuca to Tecoluta highway [7].

The etymology of its name derives from the Chontal word chäcpach, which means red pitta [8]. For the local inhabitants the name Mazateupa means ‘Place of the deer’.

The village is at an altitude of 10 meters above sea level, has 443 houses and a population of 1995 inhabitants, of which 1010 are men and 985 are women. Of the total population, 949 are indigenous speakers of the Chontal language [7]. This community is inhabited by people who are dedicated to cattle raising, agriculture (corn, beans and sugarcane) and to the elaboration of handicrafts, mainly mats, bags, hats, etc.

Mazateupa has soils corresponding to the Gleysol mólico. These soils present hydromorphic characteristics throughout the profile, meaning that they are floodable soils, their colors are grey with different tones and their texture is fine [9].

The climate is warm humid Am(f) with abundant rainfall in summer, it has an average annual temperature of 26.4° C, with the monthly maximum in May with 30.8°C and the average minimum in January with 22.4° C. [7].



Source: [10]. Topographic map

Figure 1 Location of the village of Mazateupa, in the municipality of Nacajuca

3. Results and discussion

A total of six people were interviewed, of whom three are men and three are women. The average age of these people is 48 years with a minimum of 38 and a maximum of 58. The highest level of education of one respondent is high school, two said they could not read. Their occupations are healers and housewives. It is worth mentioning that in this area the traditional doctors are supported by external medicinal plant bibliography, so they consider themselves to be more up to date with the information.

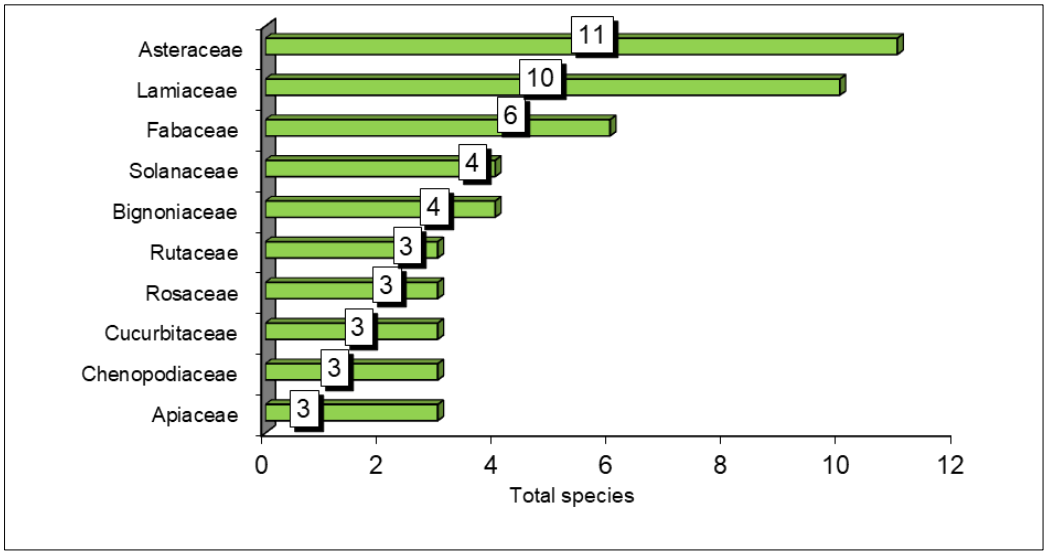


Figure 2 Botanical families with the highest number of medicinal species found in Village Mazateupa

For this locality 122 species, 111 genera and 63 families are reported, being in this case the Asteraceae and Lamiaceae the ones that presented the highest number of species with eleven and ten species each, being among them the dead flower (*Tagetes erecta* L.) and toadflax (*Epaltes mexicana* Less.) on the one hand and basil (*Ocimum basilicu*m L.) and rosemary (*Rosmarinus officinalis* L.) on the other hand (Figure 2). This is not in agreement with [11]; [12] and [13], who

indicate that the best predictor of the number of medicinal species may be the size of the family and thus, the best represented families in the region would have a higher number of species used.

In terms of the biological form that predominates in this area, herbs occupy 52% of the area, with species such as hierba buena (*Mentha piperita* L.), patchouli (*Pogostemon cablin* (Blanco) Benth) and star anise (*Tagetes lucida* Cav.) among others, the second place is occupied by trees with 25%, including mango (*Mangifera indica* L.), Guanabana (*Annona muricata* L.) or cuajilote (*Parmentiera aculeata* (Kunth) Seem.) among others, in third place are the shrub forms with 11% among which we find the windleaf (*Eupatorium morifolium* Mill.), elder (*Sambucus mexicana* C. Presl ex DC) and the fig tree (*Ricinus communis* L.) in fourth place are the creepers with 10%, with species such as cundeamor (*Momordica charantia* L.), yam (*Dioscorea composita* Hemsl.) and watermelon (*Citrullus vulgaris* L.) and in last place are the palms with 2% with species such as cocotal (*Sabal mexicana* Mort.) and coquito (*Scheelea liebmannii* Becc.). This coincides with that reported by [14] who found in his study on medicinal plants that 52% are herbs.

On the other hand, 100 conditions were recorded, however, ten were the most common, among the most frequently reported were cough which was reported twelve times, cholesterol and stomach inflammation were reported ten times each and nerves and triglycerides were reported nine times each, the rest of the conditions were reported less often (Figure 3). According to the [15], in Latin American countries, traditional medicine is used for a wide range of problems, including stomach infections, accidents, envy, fright, falling, nerves, musculoskeletal problems, economic factors and having experienced failures during allopathic medical care [15].

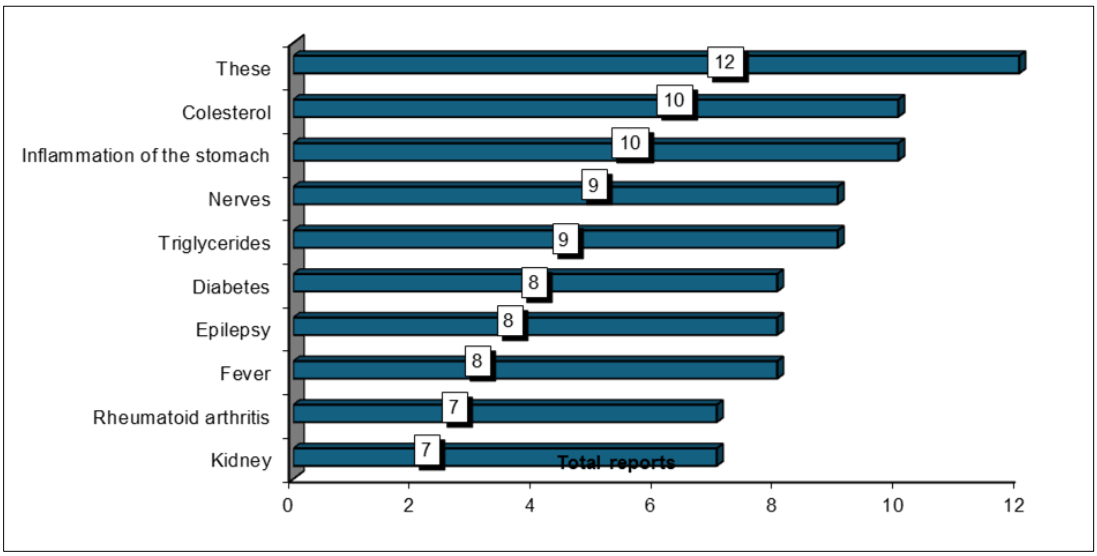


Figure 3 Most common conditions reported by the inhabitants of the Mazateupa village

As for the treatment of illnesses, there are many that can be treated with different plants and even on many occasions they are used by themselves, although there are also those that need to be mixed with other plants to get a better effect, so for coughs some recommend using the extract of momo (*Piper auritum* H. B.K.), while others recommend a mixture of cinnamon (*Cinamomum zeylanicum* Breyne), bougainvillea (*Bougainvillea glabra* Choise) and lemon (*Citrus lemon* (L.) Buró), among others. For gastritis, they use plants such as majagua (*Hampea macrocarpa* Lundel.), chamomile (*Matricaria chamomilla* L.) and purple maguey (*Tradescantia spathacea* Sw.), among others. Similarly, there are diseases such as cholesterol, which can be treated with up to ten different plants, or nervous problems and triglycerides, for which nine different plants are used (Figure 4). Contrary to the values reported by [5], where they mention the species *Lippia triphylla* (L. Hertz) Kuntze, which has up to 21 uses, the most common being for respiratory problems.

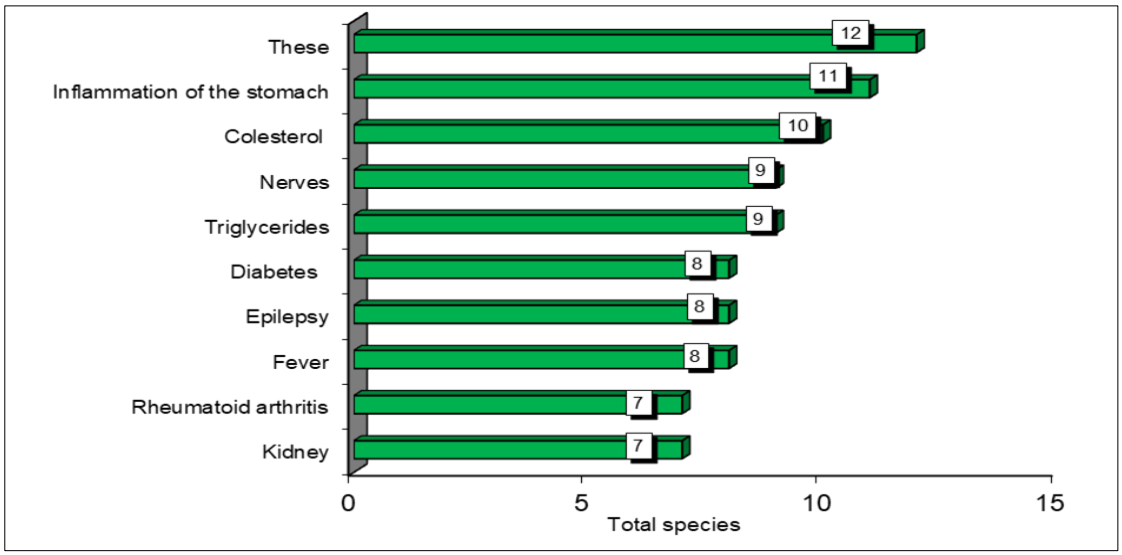


Figure 4 Most common conditions and number of species used to treat them to treat them

There are species used to treat various ailments, the most common of which is the Momo (*Piper auritum* H.B.K.), which is used to treat 11 ailments including anaemia, asthma and gastritis, among others. Another plant is chamomile (*Matricaria chamomilla* L.), which is used for stomach inflammation, coughs, vaginal lavage and chickenpox, while blood of dragon) (*Croton draco* Schltdl. & Cham.), purple maguey (*Tradescantia spathacea* Sw.) and lemon (*Citrus limon* (L.) Burm.) are said to be used for conditions such as colic, nervousness and stress. The rest of the plants reported can cure fewer conditions, or even only one, as in the case of macuilíz (*Tabebuia rosea* (Benth) DC.) or linden (*Tilia mexicana* Schldl.), which are used only for nerves (Figure 5). Similarly, [16] found that there are species with a higher degree of user preference, such as the fig tree (*Ricinus communis* L.), which is used for rabies, although, as in this study, few species achieve the highest degree of fidelity.

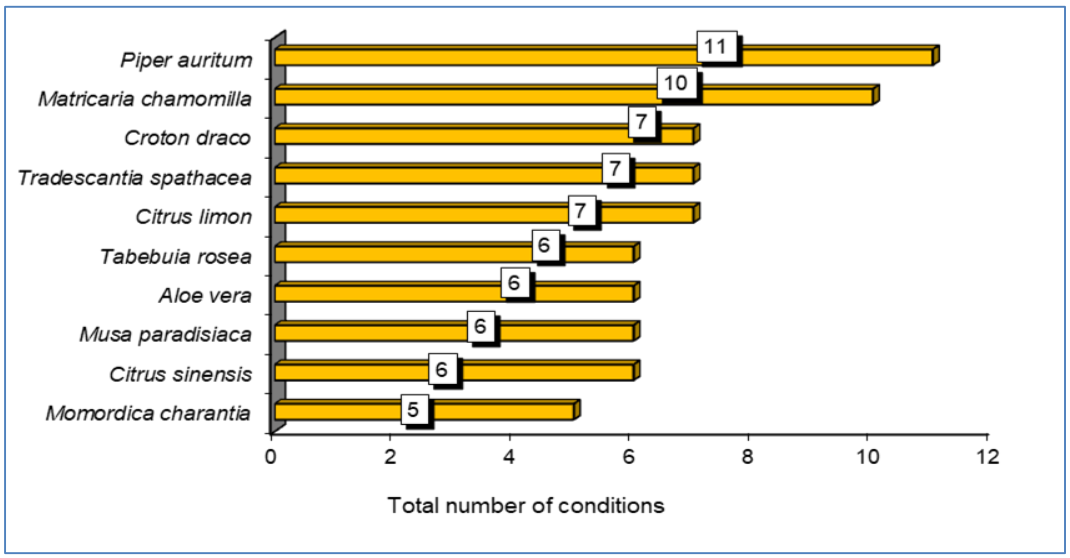


Figure 5 Species used for treating different diseases in the Mazateupa village

Of the parts of the plants mentioned by the informants as being used in the preparation of remedies for the treatment of their illnesses, leaves are the most frequently used with 41%, followed by branches with 12%, and then fruit with 11%. Bark, flowers and other parts of the plants are used to a lesser extent (Figure 6). The people mentioned that they use the leaves more because they are easier to prepare and because they are the part that has given them the best results.

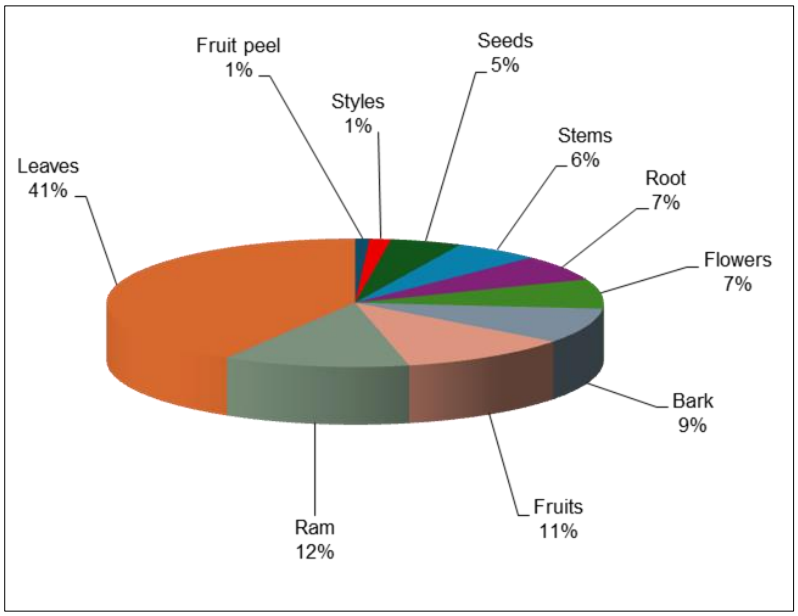


Figure 6 Parts of the plant used for medicinal purposes in the village of Mazateupa

Figure 7 shows the methods of preparing medicinal plants and their frequency of use in the village of Mazateupa. According to the information from the interviews, the most common forms of preparation were decoction (47%) and fresh (24%). Decoction is mainly used to make different medicines from any part of the plant. Another way of using medicinal plants in this community is to make tinctures, soaps, or ointments.

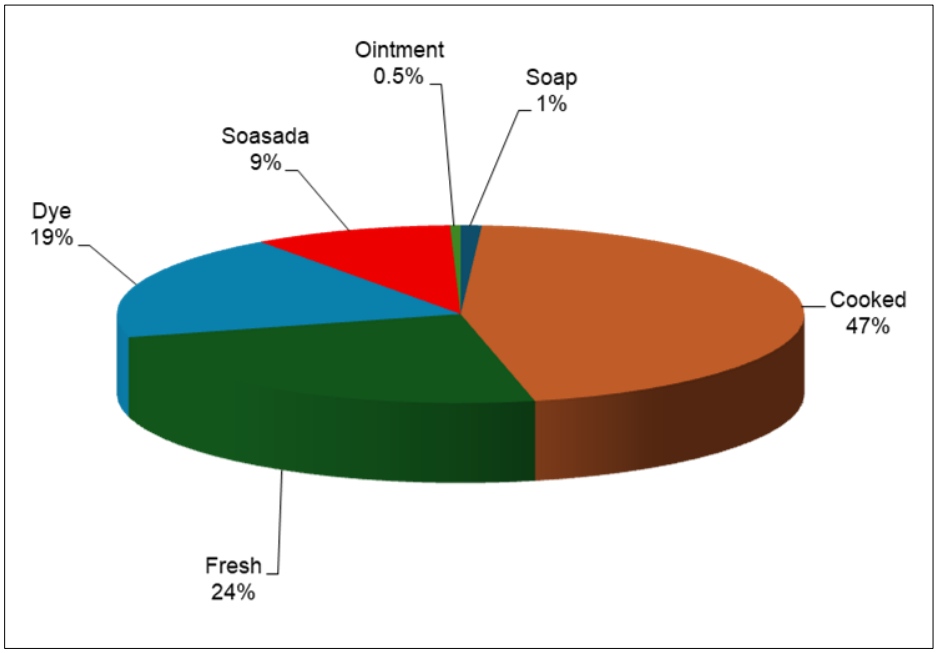


Figure 7 Preparation of medicinal plants found in the village of Mazateupa

Oral use of medicinal plants is the most common form of use, with 79% taking their preparations in this way, especially for gastrointestinal, renal, cholesterol, women's diseases, nervous conditions, etc. The cutaneous route of administration, which can be in the form of a poultice, fomentations, etc., occupies 18% of the total. This is for skin problems such as scrapes and pimples caused by infection, for which plants such as the Maculíz (*Tabebuia rosea* (Benth) DC.), the purple maguey (*Tradescantia spathacea* Sw.) and the chombo momo (*Piper umbellatum* L.) are used. About 2% is used ophthalmically. The custom of bathing with medicinal plants is being lost in this village, so only a very low percentage of plants were reported for this purpose.

In the Mazateupa village, medicinal plants are used in different ways, as they do not only have an exclusive use. 49% of the reported plants are used only for medicinal purposes, as is the case of rue (*Ruta chalepensis* L.), valerian (*Valeriana officinalis* L.) and Llanté (*Plantago major* L.) among others. Of the total number of medicinal plants found, 34% are also used as edible plants, among them maize (*Zea mays* L.), guava (*Psidium guajava* L.) and beans (*Phaseolus medicinal only*

vulgaris L.). Some 11% also have ornamental uses, such as bougainvillea (*Bougainvillea glabra* Choise) and aloe vera (*Aloe vera* L.). The rest of the plants have various uses (Figure 8). Similarly, [17] mentions that there are medicinal plants that, despite this use, are also used in other ways.

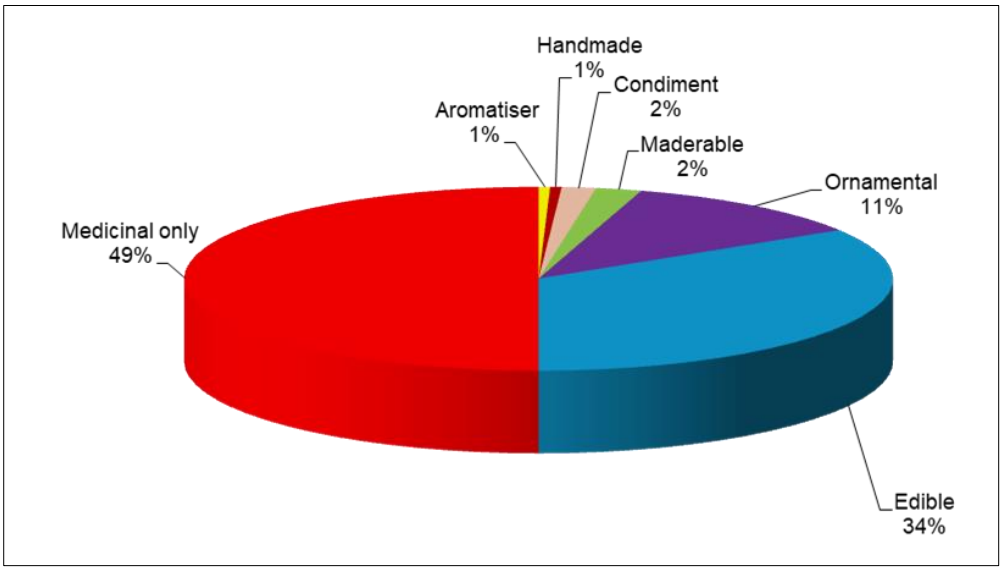


Figure 8 Other uses of medicinal plants in the Mazateupa village

The way of obtaining medicinal plants by the inhabitants of Mazateupa is varied since 45% of them are bought in the markets, among the most common are the Indian chestnut (*Aesculus hippocastanum* L.), celery (*Apium graveolens* L.) and burdock (*Arctium lappa* L.) but there are those who buy them from their neighbors or from street vendors because they do not have them in their homes. 38% are cultivated in their plots or backyards, the most common being guaco (*Aristolochia pentandra* Jacq.) and Llanté (*Plantago major* L.). Finally, 17% collect them in the field, in the nearby acahuales, on the roadside or in pastures.

4. Conclusion

In the community there is still medicinal knowledge and species from the Mayan Chontal culture, such as the purple maguey (*Tradescantia spathacea* Sw.), which is found everywhere to be used as a medicine.

Despite some problems, healers today have several advantages over the traditional healers of old. With modern communication and transport systems.

The families most represented in all the communities were the Asteraceae and Lamiaceae because they are the families with the widest distribution in Mexico, or with the largest number of species that have been incorporated into the food tradition for a long time. As in most of the work, the people who work with medicinal plants prefer to plant them in their home gardens to facilitate their consumption.

Finally, the greatest diversity of species and therefore medicinal resources was recorded in the village of Mazateupa, but this was because it was the place that made most use of species not cultivated locally.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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