

(RESEARCH ARTICLE)



Traditional knowledge about medicinal plants by maya-chontal inhabitants of the town of Tucta, municipality of Nacajuca, Tabasco, Mexico

Miguel Alberto Magaña Alejandro *, Karina de los Ángeles Ramírez Méndez, Miguel Ángel Palomeque de la Cruz and Adalberto Galindo Alcántara

University Juarez Autonomous of Tabasco, Academic Division of Biological Sciences, Villahermosa, Centro, Tabasco, México. C.P. 86150.

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Abstract

In Tabasco the use of medicinal plants is extensive by a large group of the population, both rural and urban, largely because they do not have the economic resources. Therefore both, researchers and governmental institutions have been conducting research to rescue the knowledge about medicinal plants. One of these places is the town of Tucta in Nacajuca, Tabasco, where the largest number of Mayan-Chontal indigenous groups live. Para ello, se aplicó un modelo de metodología Etnobotánica, se comenzó a seleccionar a los informantes con los que se trabajó mediante la técnica de bola de nieve. In this small community, only three people had the knowledge according to the technique used, of which two are women and one is a man. The average age of these people is 55 years old. There are 87 species and 78 genera grouped in 44 families, being the Asteraceae the ones that presented the highest number of species with 9. Regarding the biological form that predominates, herbs occupy 60%, with species such as coriander (*Parthenium hysterophorus* L.) and incense (*Artemisia mexicana* Muller) among others. Forty-eight conditions were recorded, however, 11 are the most common, the most frequently reported was cough 13 times. The parts of the plants most used for the preparation of remedies are the leaves with 56% of cases. Finally, 46% of the plants are cultivated in their gardens. This shows that in most of the communities there is still knowledge and medicinal species from the Chontal Mayan culture.

Keywords: Chontales; Maya; Nacajuca; Traditional medicine; Suffering

1. Introduction

Indigenous communities have a deep knowledge of their environment [1,2], they know the numerous uses that can be given to most of their natural resources and this knowledge constitutes an important basis for the conservation of global biodiversity and for its sustainable use. Throughout history, civilizations have moved around plants, becoming the living beings that have most influenced humanity. On the other hand, 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 [3].

Traditional medicine resumes an important role in the treatment of common and relatively mild diseases. Its use is extensive by a large group of the population, both rural and urban; largely due to not having the financial resources or ease of access to institutional medicine [4].

The importance of medicinal plants is becoming more evident today in developing countries. On the other hand, in technologically advanced countries it is estimated that 60% of the population regularly use medicinal plants to combat certain ailments [5].

* Corresponding author: Magaña Alejandro Miguel Alberto

Modern medicine, through chemical analysis, has managed to specify the validity of those plants that tradition had used based on the trial-and-error method. Many turned out to be harmless and others potentially dangerous. It has been precisely biochemical analyzes that have been able to determine what the main components of medicinal plants are [6].

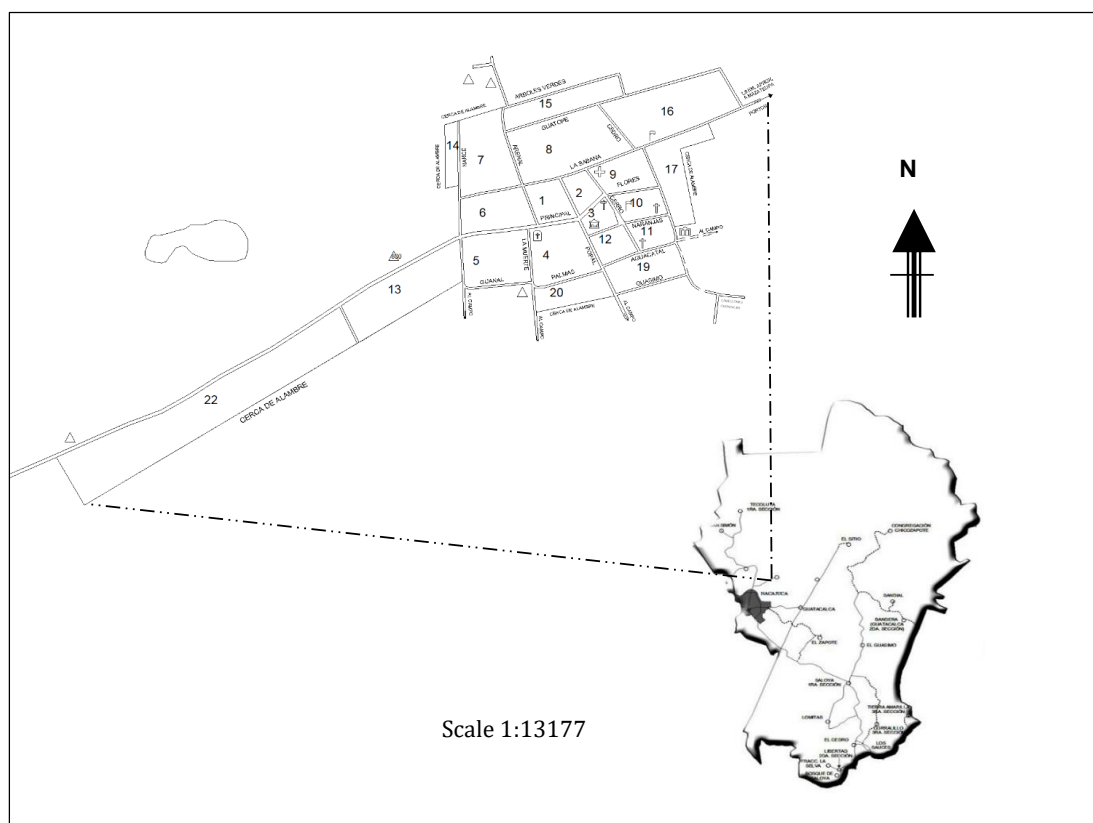
In Tabasco, both researchers and government institutions have been carrying out research to rescue knowledge about medicinal plants. One of those places is the town of Tucta in Nacajuca, Tabasco, where the largest number of Mayan-Chontal indigenous groups live and where traditional doctors make use of medicinal plants to cure the inhabitants of that area [7]. That is why this research was carried out in this place, with the idea of rescuing this source of traditional knowledge, since it represents a part of the cultural heritage of the Municipality and why not, of the State.

2. Materials and Method

2.1. Description of the town

Tucta (Sikts'it), is located at 18° 11' 42" north latitude and 92° 59' 38" west longitude (Figure 1), it is located at km 4.5 of the Nacajuca to Tucta highway [8].

The etymology of its name derives from the Chontal word Sätz' it, which is the name of a town [9]. However, for the local inhabitants the name Tucta means "Place of hills".



Source: INEGI. 2000. Topographic chart

Figure 1 Location of the Tucta town, in the municipality of Nacajuca, Tabasco

The town is 10 meters above sea level, has 353 homes and a population of 1,790 inhabitants, of which 943 are men and 847 are women. Of the total existing population, 702 are indigenous speakers of the Chontal language [8].

The area has a considerable extension of swampy areas that surround the town, so they chose to implement a chontal ridge program, with 76 indigenous farmers from the community of Tucta. Agriculture in this community is of great importance, since some time ago the peasants used agricultural techniques, such as the basic crops of corn and beans, this being the fundamental basis for which they planted in certain months of the year, adequate time for sowing [8].

Very few people are dedicated to making crafts, making only mats and hats. Most of the population professes the Catholic religion; therefore, the most important religious festival is that of the Lord of Santiago, which is celebrated on July 25.

The climate is warm humid Am(f) a precipitation regime that is characterized by a total rainfall of 1707 mm with a maximum monthly average of 735 mm in the month of September and the monthly minimum of 63.9 mm in the month of February [8].

3. Method

The methodology that was applied is a model of Ethnobotanical methodology [10], which consists of obtaining the most information from the population based on their participation in the data collection stage.

To do this, the informants with whom we worked began to be selected using the snowball technique [11], which consists of selecting an initial or basic sample of individuals and establishing in each interview which new people from the population of study must be interviewed, to integrate the complete sample.

In this way, we worked mainly with people who the community itself recognized as possessing greater knowledge about medicinal plants, including healers. Thus, in a theoretical sampling logic, there are quality informants. The first conversations with the informants were developed in accordance with what was proposed by [12], where the interest was to get closer to the meaning of the observed actions to approach the everyday interpretations that people make.

The number of questionnaires that was applied per community depended on the information that was collected to know who the people were who knew the most about plants and only one person from each house was considered. Based on the results of the interviews, the specimens mentioned as medicinal were collected; for this purpose, the collection technique proposed by [13] was used. With the collected material, taxonomic identification was carried out, which consisted of recognizing each collected specimen, at the level of family, genus, and species. The identification was carried out in the Herbarium of the Academic Division of Biological Sciences. Considering the Flora of Guatemala [14], Flora of Panama [15] and Flora of Veracruz [16] as specialized bibliography, it was also supported by the Catalog of vulgar and scientific names. of Tabasco plants [17].

4. Results

In this community, only three people were interviewed, of which two are women and one man. The average age of these people is 55 years with a minimum of 43 and a maximum of 77. The maximum education of one of the people surveyed is secondary, but two said they did not know how to read because they had no education. The main occupation of women is housewives and men are healers, although they also work as farmers.

4.1. Analysis of the use of medicinal plants

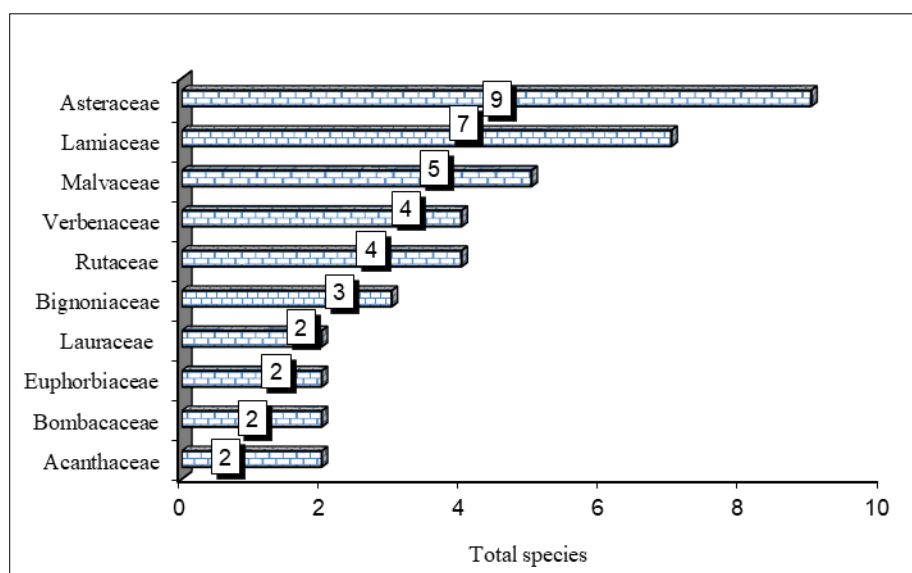


Figure 2 Botanical families with the highest number of medicinal species found in the town of Tucta.

For this locality, 87 species and 78 genera grouped in 44 families are reported, with the Asteraceae being the ones that presented the highest number of species with 9, including arnica (*Tithonia diversifolia* (Hemsl.) Gray) mullein (*Verbascum thapsus* L.) and tixcoque (*Tagetes erecta* L.). The Lamiaceae family follows with seven species, the rest of the families have smaller number of medicinal species (Figure 2.)

As for the biological form that predominates in this area, herbs occupy 60%, with species such as cilantro (*Parthenium hysterophorus* L.), chamomile (*Matricaria chamomilla* L.) and incense (*Artemisia mexicana* Muller) among others. The second place is occupied by trees with 22% with species such as the cuajilote (*Parmentiera aculeata* (Kunth) Seem.), Achioté (*Bixa orellana* L.) or the ceiba (*Ceiba pentandra* (L.) Gaert.) among others, in third place are the shrubby forms with 10% among which we find arnica (*Tithonia diversifolia* (Hemsl.) Gray), Coscorrón (*Crataeva tapia* L.) and ergot (*Acacia cornigera* (L.) Wild.) in fourth place. The vines follow with 7%, with species such as the stamineal (*Disciphania calocarpa* Standl.) and the cocobá (*Aristolochia odoratissima* L.) finally there are the palms with 1%, the only species is the chiquiyul (*Bactris balanoidea* (Oerst.) Wendl.).

On the other hand, 48 conditions were recorded, however. eleven are the most common, among those reported most frequently is cough with 13 times reported, diarrhea and fever were reported 12 and 11 times each and for headache and flu they were reported nine and eight times each one. Other conditions that were frequently reported are cold sores, stomach inflammation, headaches, diabetes, and asthma. It is worth mentioning that this area is one of the places where traditional doctors are very scarce, so most people prefer to visit health centers. Regarding the way to treat conditions, there are many that can be treated with different species and on other occasions they use only one, but there are also conditions where different species have to be mixed so that their effect is better, so we have to cough, some recommend using the extract of sweet grass (*Lippia dulcis* Trev.) and others recommend the mixture of oregano (*Plecthranthus amboinicus* (Lour.) Spreng.) and elderberry (*Sambucus mexicana* C. Presl ex DC.) or for diarrhea that can use up to 12 different species, some of them are the sibil (*Malvaviscus arboreus* Cav.), the sour orange (*Citrus aurantium* L.) and the cocobá (*Aristolochia odoratissima* L.) among others. In the same way, fever can be treated with 10 different species. For the rest of the conditions, they use a smaller number of species. (Figure 3).

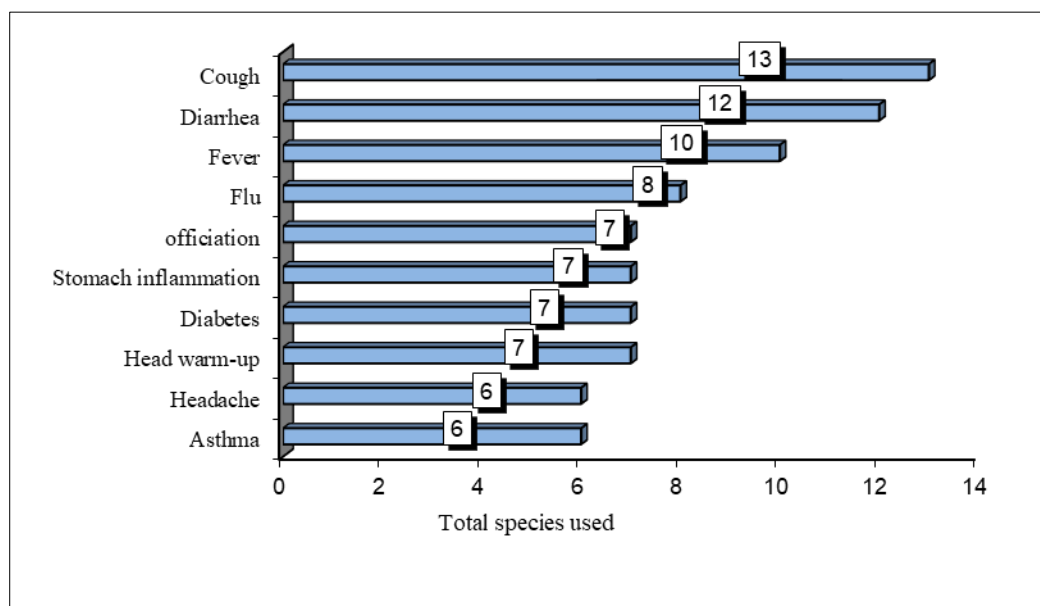


Figure 3 Most common conditions and number of species that use to treat them.

There are species that are used to treat different conditions, among the most common we find lemon balm (*Melissa officinalis* L.) that is used for 6 different conditions such as asthma, headache, and fever, among others, which must be ingested. mainly in tea. Other plants are maguey (*Tradescantia spathacea* Sw.), peppermint (*Mentha piperita* L.), sibil (*Malvaviscus arboreus* Cav.), incense (*Artemisia mexicana* Muller) and aloe vera (*Aloe vera* L.) that use them to heal wounds, head warming, diarrhea, dysentery, and inflammation of the stomach. The rest of the reported species are used to cure fewer conditions, such as epazote (*Chenopodium ambrosioides* L.), which is used only for parasites. (Figure 4).

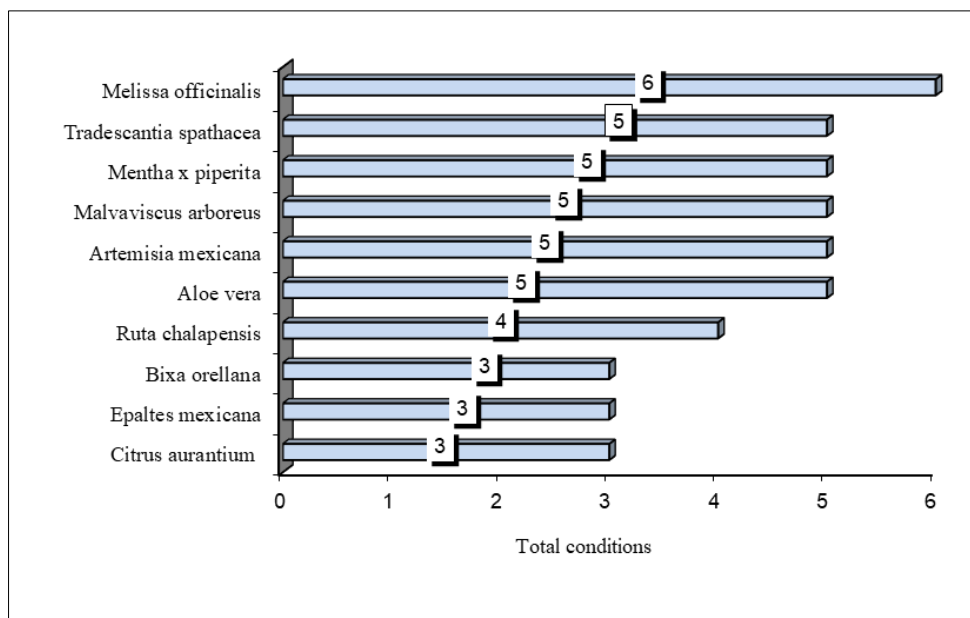


Figure 4 Species used to treat different conditions in the Tucta town.

Of the parts of the plants used that the informants mentioned for the preparation of remedies in the treatment of their conditions, the leaves are the ones used the most with 56% of cases, followed by the branches with 15%. Another 9% of species use the roots. Flowers bark, and other parts of plants use them in a lesser proportion (Figure 5). However, using the leaves is best because that is where the largest amount of the active ingredients is concentrated.

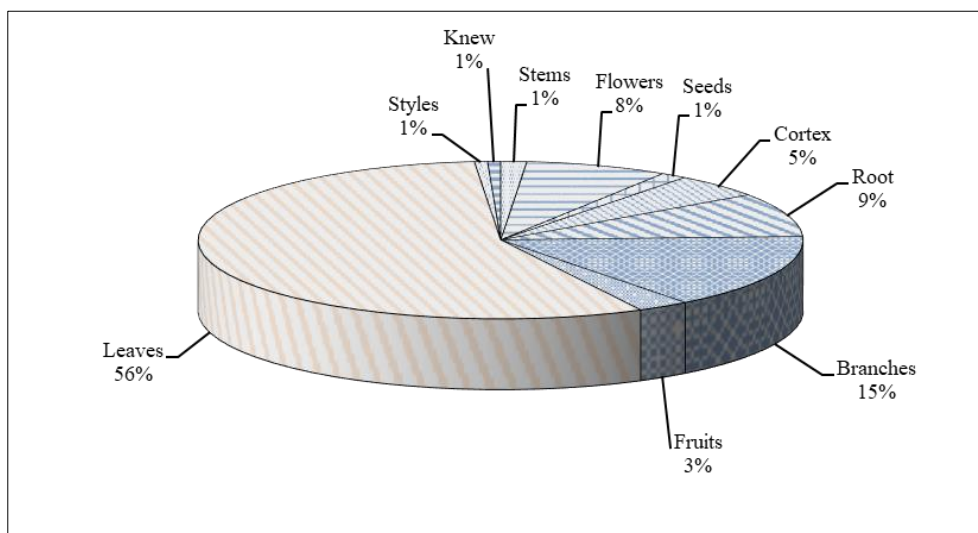


Figure 5 Parts of the plant used as medicinal in the Tucta town.

According to survey information, three are the most common ways of using plants, decoction with 47%. It is mainly used to prepare remedies from hard parts of the plant, but it can also be used with soft parts. Another way of using medicinal plants in this community is 30% fresh, in this case the plant is used directly, as a poultice or in maceration of these without going through a cooking process and finally there are those that use roasted by 3%, which only passes the plants through the fire so that they wither, and the sap can be extracted from them. For the route of administration of medicinal plants, the oral form of use is the most common given, since 58% take their preparation in this way, this is mainly for diseases of the gastrointestinal, kidney, cholesterol, nerves, etc.

36% use plants for skin problems or scrapes and pimples caused by an infection, using them in the form of a poultice or promotion. In that sense, they use plants such as cancerillo (*Blechnum pyramidatum* (Lam.) Urb.), Coscorrón (*Crataeva tapia* L.), and the toatan (*Colubrina arborescens* (Mill.) Jacq.). Very few plants are used for bathing. They comment that

it helps them mitigate health problems, relax the body, and even cool children's heads when they get hot. Which they think is good luck, this activity is highly recommended by healers, mainly those who work on spiritual aspects (Figure 6).

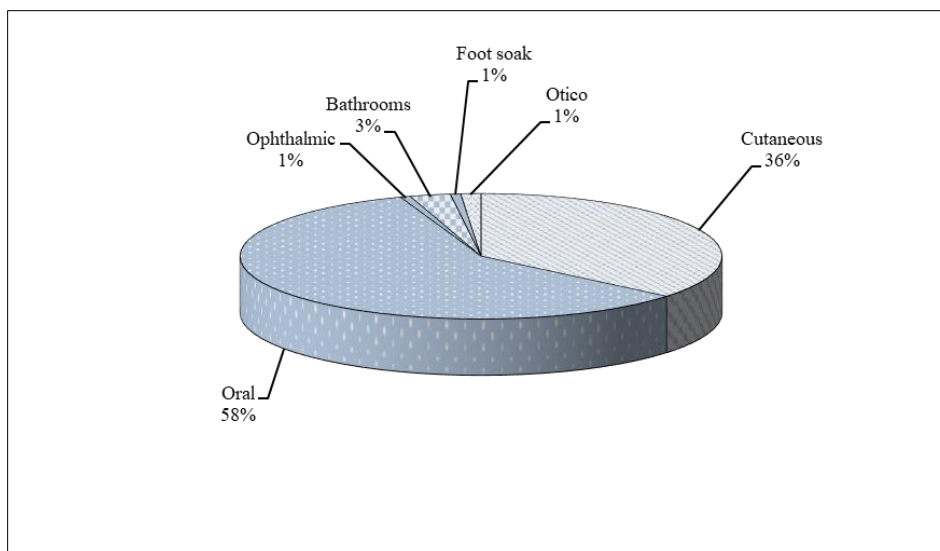


Figure 6 Route of administration of medicinal plants found in the town of Tucta.

In the town of Tucta, the plants that are used as medicinal are not only used for this purpose, but they are given other uses, although there are also those that are only medicinal. Thus, we have that 64% is used only as medicinal, with plants such as lemongrass (*Cymbopogon citratus* Stapf.), nightshade (*Kalanchoe flammula* Staff.) and chamomile (*Matricaria chamomilla* L.) among others. Many are part of the diet, so we have that of the total medicinal plants that were found, 15% are also used as edibles, including plants such as plantain (*Musa paradisiaca* L.), avocado (*Persea americana* Mill.) and guava (*Psidium guajava* L.). 13% also have ornamental use, such as bougainvillea (*Bougainvillea glabra* Choise) and vicaria (*Catharanthus roseus* (L.) Donn.). The rest of the plants have other uses. (Figure 7).

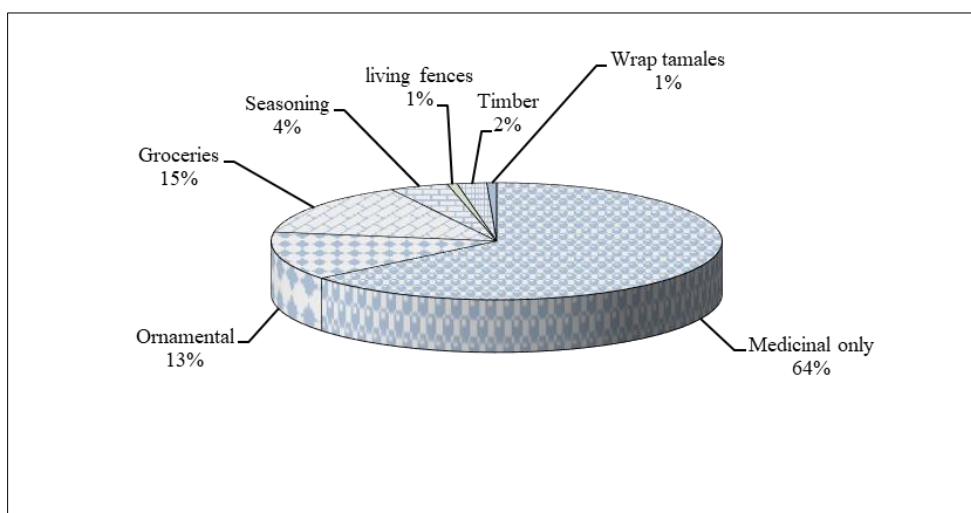


Figure 7 Other uses that medicinal plants can have in the environment town of Tucta.

Finally, the way the residents of Tucta obtain medicinal plants is not very varied since 46% is grown in their family gardens or in their own garden. Among the most common species is the sabila (*Aloe vera* L.), soursop (*Annona muricata* L.) and incense (*Artemisia mexicana* Muller). Another 36% is obtained in the field because they are mainly wild plants, examples of which are the cancerillo (*Blechnum pyramidatum* (Lam.) Urb.), the majahua (*Hampea macrocarpa* Lundel.) and the gurusapo (*Epaltes mexicana* Less.) among others. It is worth mentioning that of the plants that they obtain in the field, the majority grow in the grasslands and the same amount that they collect in the acahuales and 18% of the plants are acquired mainly in the markets because there are none in the community and another part is They buy from

neighbors, among the most common species are dill (*Anethum graveolens* L.) and chamomile (*Matricaria chamomilla* L.).



Figure 8 Medicinal plants grown in the back of the house in Tucta.

5. Discussion

It was found that knowledge about the use of medicinal plants is found mainly in inhabitants over 60 years of age, except in rare exceptions where people who have knowledge about medicinal plants are children of people whose parents were healers or had taken courses. to know a little more about the use of medicinal plants. The above is like what was mentioned by [18], who found in Copándaro de Galeana, Michoacán, that knowledge about the use of medicinal plants is found mainly in inhabitants over 50 years of age with rare exceptions, and where women play a fundamental role.

Finally, the way in which the Mayan-Chontals obtain medicinal plants is little varied since 43% of the plants are grown in their family gardens or in their own garden. Among the most common species is the sabila (*Aloe vera* L.), soursop (*Annona muricata* L.) and incense (*Artemisia mexicana* Muller). Another 32% buy them mainly in the markets because there are none in the community and on rare occasions, they buy them from neighbors. Among the most common species purchased in the markets are dill (*Anethum graveolens* L.) and chamomile (*Matricaria chamomilla* L.) and 25% get them in the field because they are mainly wild plants. Examples of them are the cancerillo (*Blechum pyramidatum* (Lam.) Urb.), the majahua (*Hampea macrocarpa* Lundel.) and the gurusapo (*Epaltes Mexican* Less.). It is worth mentioning that of the plants that are obtained in the field, the majority grow in the grasslands and the same are collected in the acahuals. Similarly, [19] mentions that the people she interviewed reported that they grow their plants in their gardens and that only when they do not have them do they resort to buying them. This confirms what some herbalists mention that, if they are dedicated to working with traditional medicine, then it is easier to plant them in their gardens.

6. Conclusion

In most communities there is still knowledge and medicinal species typical of the Chontal Mayan culture, such is the case of the purple maguey (*Tradescantia spathacea* Sw.) that we find everywhere to be used as medicinal.

The total number of species reported in this study is more than double that reported in other studies carried out in the state, despite having interviewed more people.

Las formas de preparación de las plantas tienden a la estandarización. Solo se mezclan plantas para el mismo propósito, pero varían según el material disponible.

Al igual que en la mayoría de los trabajos, las personas que trabajan con plantas medicinales, prefieren sembrarlas dentro de sus huertos familiares para facilitar su consumo

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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