



Ethnobotanical Survey of Medicinal Plants: Knowledge, Use and Origin

**Maiara dos Santos Sousa^{1*}, Letícia do Socorro Cunha¹, Renata Adelaide Pluta¹,
Vanessa de Oliveira Faria¹, Alysson Oliveira de Carvalho¹
and Karlene Fernandes de Almeida¹**

¹State University of Western Paraná, Postgraduate Course in Agronomy, Brazil.

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JEAI/2021/v43i930738

Editor(s):

(1) Dr. Chen Chin Chang, Hunan Women's University, China.

Reviewers:

(1) A. K. M. Quamruzzaman, Bangladesh Agricultural Research Institute (BARI), Bangladesh.

(2) Jami Nyitan, CSIR-NEIST, India.

Complete Peer review History: <https://www.sdiarticle4.com/review-history/73721>

Original Research Article

Received 12 August 2021

Accepted 22 October 2021

Published 23 October 2021

ABSTRACT

Medicinal plants play an important role in curing various diseases, so the aim of this work was to conduct a study on the ethnobotanical survey of medicinal plants with students from the agronomy course at the Federal Institute of Pará Campus Castanhal. The methodology used to carry out the study was an interview, guided by a semi-structured questionnaire. After the information collected, the systematization of the data was carried out, followed by using medicinal plants of mixed, diverse and common use as classification criteria. The results obtained were that the interviewees have considerable knowledge about medicinal plants, mentioning 48 species of plants used for the treatment of various diseases, with plants standing out for diseases with symptoms of cough, flu, inflammation and diarrhea, with different forms of preparation, among the most cited were decoction, tea, bath and juice. Despite the diverse knowledge about the use of species for medicinal purposes, this knowledge over time is lost and needs to be recovered through ethnobotanical study.

Keywords: Diseases; treatment; knowledge; rescued.

1. INTRODUCTION

From an ethnobotanical perspective, the relationship between man and plants has been reported from ancient times to the present day, with countless destinations and environmental functions of plants in human daily life: food, medicine production, fuel, aromatization, ornamentation, handicrafts, among others [1]. In this way, ethnobotany aims to rescue and preserve the traditional knowledge of people in relation to species, their uses, management and relations with the environment and, through local knowledge, it allows to understand the use, obtaining information and knowledge about useful plant species and enabling the registration of the organization structure, composition, management and function of plants [2].

[3] states that medicinal plants are any plants that are administered to humans or animals and have a therapeutic function. The treatment made using medicinal plants is called herbal therapy, and herbal medicines are medicines produced from these plants [3]. Describe that the use of medicinal plants is a practice widely used in the cure of diseases, they correspond to the oldest "weapons" used by man in the treatment of ailments of all types, that is, the use of plants in the prevention and/or treatment of diseases is a common habit in human history.

And still according to [4] the use of medicinal plants as a therapeutic basis is an ancient knowledge, used in different cultures around the world, and this use has undergone intense transformations due to the admission of highly industrialized synthetic treatment, in the middle of the century XX.

[5] points out that the first data recorded on the use of medicinal plants was around 500 BC. C., in Chinese texts that describe the names, doses and recommendations for the use of these plants for the treatment of diseases. Furthermore, other records were found in the Egyptian manuscript "Ebers Papyrus", from 1500 BC. C., which contained information on 811 prescriptions and 700 drugs. And some of these plants are still used, such as Ginseng (*Panax spp.*), Ephedra spp., Cassia spp. and *Rheum palmatum L.*, including as sources for pharmaceutical industries.

[5,6] confirm that the first herbal records date from the period 2838-2698 a. C., when the Chinese Emperor Shen Nung listed 365 herbs for

medicinal purposes and poisons that were used under the Taoist inspiration of Pan Ki, accepted as God of creation, these cataloged species were grouped in herbarium, this first herbarium depended on the ordering of two poles opposites: yang-light, sky, heat, left; and the yin-darkness, earth, cold, right. Around 1500 BC C., the basis of Hindu medicine was already revealed in two sacred texts: Veda (Learning) and Ayurveda (Long Life Learning).

Historical surveys show the constant presence of medicinal plants, among different peoples, in the process of curing diseases. Thus, the use of plants in the treatment and cure of illnesses is very old as far as the human species is concerned. This popular knowledge persists to the present day, safeguarding the different cultural meanings [7].

In this context, knowledge about medicinal plants is very important for communities and ethnic groups, as it often symbolizes the only therapeutic resource for curing diseases [8]. Mainly in the poorest regions of the country, and even in large Brazilian cities, medicinal plants are sold in open markets, popular markets and found in residential backyards.

Thus, the present study aimed to evaluate the ethnoknowledge of knowing which medicinal plants, which parts of the plant are used and how they are used, in the fight against health problems of academics in the agronomy course.

2. METHODOLOGY

The present study was carried out in October 2017, with students from the ninth (9th) semester of the Bachelor's Degree in Agronomy at the Federal Institute of Pará Campus Castanhal-IFPA, and the students are from different cities, but all from the state of Pará, residents of the municipalities of Acará, Concórdia, Santa Izabel and Ulianópolis, three of them from rural and one urban origin.

To collect information on the knowledge and use of medicinal plants, the semi-structured questionnaire suggested by [9] was applied, which is characterized by presenting basic questions supported by theories and hypotheses that relate to the research theme. new hypothesis that arises from the respondents' answers, and these questions consist of a script guided dialogue of 10 to 15 key questions previously determined. The application of this questionnaire was carried out through a high

interview, that is, each holder of knowledge about medicinal plants did a self-assessment, taking into account the questions asked in the semi-structured questionnaire.

After collecting the information, a bibliographic survey was carried out on the most cited species, after this process the data were organized in Excel 2007 spreadsheets to perform the calculations regarding the quantities of species surveyed, part of the plants used, indication, form of use and the way in which knowledge is passed on. For better understanding, criteria such as common, mixed and diverse uses were selected. Medicinal plants of common use are plants of the same species, however the parts are used for different purposes, those of mixed uses are medicinal plants that can be used in association with other species of medicinal plants, whereas medicinal plants of different uses are plants that can be used for different purposes.

3. RESULTS AND DISCUSSION

According to the information collected, all self-interviewed people reported that they have knowledge of medicinal plants, as shown in Table 1. The informants stated that they use medicinal plants when necessary and in the first cases, which corroborates previously with the study by [10], where he showed that only 10.8% do not use medicinal plants, this may be due to the fact that the population has increased access to pharmaceutical specialties in recent years. Regarding the therapeutic indication of the medicinal plants found, most coincide with what was reported by some authors such as [11, 12].

According to the data collected, fifty medicinal plants were mentioned, used for the treatment of illnesses. The interviewees said that they use several plants for medicinal purposes, among the species mentioned, pariri was one of the species that showed common use, as well as the same form of preparation as shown in Table 1.

The orange species was also cited as a use for medicinal purposes, being mentioned by two of the interviewees, but the parts of the plants used are different, one of the three that self-interviewed mentioned the use of dry fruit peel to combat intestinal infection (food that makes mal) in the form of tea and the other reported that the fresh orange leaf can be used to relieve stress, improve the night's sleep. It is noticed that the same species are used, but the parts of the plant used and the indication are different, however, the way in which it is prepared are the same. In

this same context, the plant popularly known as terra orange, belonging to the same species as citrus, was also mentioned with the use of juice ingestion in the treatment of diabetes, anemia and rheumatism. These results corroborate data from a study by [13] regarding the use of medicinal plants where citrus were also mentioned.

Of the 48 plants mentioned for medicinal purposes, 9 of these were identified as a form of mixed use, which were: Jardineira, Favaca, Catinga de mulata, Cat's claw, Andiroba, Aloe, Mint, Capim santo and Ginger, these species are used with other species in the preparation of teas, baths, bottles, syrups and others.

Twelve plants of different uses were also mentioned, which are: papaya flower, black sesame, earth orange, sucupira bean, jatobá, copaíba, jucá, rue, orange tree, mastruz, bud broom and andiroba, of which these correspond 6 % of such plants known by the informants.

The papaya flower is used for flu, headache, where the petal of the flowers is used in the form of a bath. Dried macerated black sesame seeds are used in stroke (cerebrovascular accident) and headache, which are used in contact form. Terra orange juice is used in the treatment of diabetes, anemia, rheumatism, seed prepared as an infusion is indicated for the cure of cysts on the ovaries, asthma, sore throat, wounds and inflammation, dry peel in the form of a decoction is indicated for problems pulmonary infections, tuberculosis and inflammation in the urethra, copaiba seed oil is used as an anti-inflammatory and for wound healing, seed by infusion method is used to treat sore throats, high breath, flu, pharyngitis, bronchitis, pneumonia, the leaves and stem serves for stroke and dizziness, fresh leaves and bark in the form of tea, Leaves and stem in the treatment of stomach, roundworm and bills, in the form of root decoction (urine infection) and blessing leaf and oil from seed (Anti-inflammatory, hair treatment) respectively.

The research survey showed the use of 3 different medicinal plants, such as the use of coconut mesocarp resin for toothache, the black maria plant in the treatment of cough prepared in the form of licker or syrup, the use of heated pirarucu plant leaves in the treatment of chilblains. What drew attention was the forms of use, because during the research, no literature was found that addressed these forms of uses of these medicinal plants.

Table 1. Use of parts of medicinal plants mentioned by respondents correlated with the literature

Name/Part used	Scientific name	Use mentioned in Literature	Use mentioned by Respondents
Pumpkin (seeds - leaves)	<i>Curcubita courgero</i>	The seeds are considered deworming, the tea from the leaves is considered stomatic, anti-inflammatory of the kidneys, liver and spleen.	Worm
Cotton (Leaves, root bark and seeds)	<i>Gossypium barbadense L.</i>	Use as Anti-inflammatory, dysentery and uterine bleeding, the leaves as healing, root tea for memory, amenorrhea, menopausal disorders and sexual impotence.	Secretion
Garlic (Bulb)	<i>Allium ascolonicum L.</i>	It is used to cure numerous ailments from digestive disorders, worms and intestinal parasites, edema, flu, thrombosis, to skin and mucous membrane infections.	cough and flu
Andiroba (Seed -oil)	<i>Carapa guianensis Aubl.</i>	Anti inflammatory, healing rheumatic, against ticks, lice.	Inflammation
Rue (Leaves and stem)	<i>Ruta graveolens L</i>	Treatment of menstrual disorders, skin inflammation, earache, toothache, fever, cramps, liver disease, worms.	Stroke, dizziness
Banana tree (Green fruit)	<i>Musa sp.</i>	Used in changes in heartbeat, various types of allergy, PMS, constipation, childhood diarrhea, bronchitis, ulcers, epilepsy.	Diarrhea
Beetroot (Source)	Beta vulgaris L	Protects the body from liver diseases, preventing the accumulation of fat deposits in the liver, used for the treatment of cancer, inhibits tumor growth and prevents the formation of cancers.	nemia
Mulatto catinga (sheet)	<i>Macaça erva</i>	The tea from this plant helps in the treatment of worms, rheumatism, regularization of the menstrual cycle, kidney problems; tachycardia and epilepsy and in asthma control.	Earache
Cashew tree (shell)	<i>Anacardium occidentale L.</i>	Bark used in diabetes and tonic and leaves as a depurative, in diabetes, bile duct and weight loss regimens.	Blood clotting
Canarana (thatch)	<i>Costus spicatus</i>	Used for intestinal and urinary inflammation	Urinary infection
Onion head (stalk)	<i>Allium cepa L.</i>	Bronchitis, Sinus Influenza	Cough
Coconut tree (ripe fruit and mesocarp)	<i>Cocos nucifera</i>	Use for Gastritis, Abdominal Pain, Vomiting and Nausea	Toothache
Guava tree (seed)	<i>Psidium guajava</i>	Use of treatments for digestive disorders.	Diarrhea
Orange (fresh leaves and bark)	<i>Citrus sinensis</i>	Helps in the treatment of anemia, scobut, fever, flu, constipation, digestive problems (heartburn, gas, colic, gastritis, ulcers etc), colds, nervous tension.	Decoction (relieve stress, improve night sleep, intestinal anti-inflammatory, diarrhea)
Lemon Tree (Fruit)	<i>Citrus SP</i>	Used for bronchitis, furunculosis, flu, hoarseness.	Impingem
Papaya (Seed)	<i>Carica papaya L.</i>	The seeds, eaten raw, are considered worms. The female leaves, in the form of infusion and decoction, are used as pectorals in liver diseases and headaches. The fruit is stomach and digestive.	Roundworm
Maria preta (sheets)	<i>Solanum americanum</i>	It has diuretic, laxative, anaphrodisiac, emollient and eliminates toxins and waste from the body.	Cough
Mastruck (Leaves and stem)	<i>Dysphania ambrosioides</i>	Treatment of worms, elimination of infections, fungal or bacterial, combating digestive problems by increasing gastric juice, treats constipation, anti-inflammatory and anti-rheumatic action, expectorant effect on respiratory diseases.	Stomach, roundworm and bills
Mucuraca (Sheets)	<i>Petiveria tetrandra</i>	Anti-inflammatory effect, Immune system, digestive health	Toothache
Pariiri (Leaves and Stem)	<i>Arrabidaea Chica</i>	Treatments for intestinal colic, inflammation and anemia, treatment of skin sores and vaginal discharge.	Anemia

Name/Part used	Scientific name	Use mentioned in Literature	Use mentioned by Respondents
Pirarucu (Sheets)	<i>Kalanchoe Pinnata</i>	Relieves migraines, headaches, used for respiratory infections, cough and fever. Also placed on cuts, scrapes, burns and other skin conditions.	Chilblains of the feet
Stone break (Whole plant)	<i>Phyllanthus niruri L.</i>	Diuretic (makes you urinate), aperiente (opens up your appetite), analgesic, muscle relaxant, anti-infective.	Kidney calculations
Cat's claw (bark)	<i>Uncaria tomentosa</i>	Anti-inflammatory effect, Immune system, digestive health, fights herpes, chronic fatigue syndrome, asthma, hay fever, Alzheimer's disease.	Fibroids
Yellow uxi (bark)	<i>Endopleura uchi</i>	Inflammation of the uterus, arthritis, heart problems, asthma, rheumatism, cirrhosis, high blood pressure, urinary tract infections, fibroids, gastric ulcers.	Mioma
Button broom	<i>Spermacoce verticillata</i>	Anti-inflammatory effect, Immune system, digestive health, herpes fights, chronic fatigue syndrome, asthma, hay fever, Alzheimer's disease.	Root decoction (urine infection) blessing leaf.
Male papaya flower	<i>Carica papaya L.</i>	It has properties against coughing, respiratory problems, flu, allergies, hoarseness, colds and the like.	Flu, headache
Bib	<i>Alpinia zerumbet</i>	Anti-inflammatory effect, Immune system, digestive health	Mixed use baths (headache, flu and colds)
Ginger (rhizome)	<i>Zingiber officinale Rosc</i>	Use against asthma, bronchitis and menorrhagia. Digestive stimulant action, local antimicrobial action, fights hoarseness and throat inflammation.	Flu (decoction), juices like other plants, asthma, bronchitis, dyspepsia, colic.
Dwarf	<i>Justicia pectoralis</i>	Used to treat bronchitis, fight thrush, relieve heartburn, treat dermatitis, flu, fever and cough, fight insomnia, end nausea, have antibacterial properties, effective in disinflammation.	Headache (heated by fire)
Favaca	<i>Ocimum basilicum L.</i>	Helps in the treatment of thrush, tonsillitis, angina, bronchitis, catarrh, dyspepsia, respiratory tract diseases, spasms, gas, flu, colds, coughing and vomiting	Bath (leaves) mixed use, seasoning (leaves), seeds (inserted into the eyes to remove impurities. Ex, mote)
Favacão	<i>Ocimum gratissimum L.</i>	Serves for cough, bronchitis, flu, cold, fever, sore throat, rheumatism	Baths (headache)
Bilberry (leaf)	<i>Plectranthus ornatos</i>	It is used to treat poor digestion, liver problems, gout, cystitis, headache and cold sweats.	Constipation (decoction)
Stone break (Leaf)	<i>Phyllanthus spp.</i>	Assists in expelling kidney or bladder stones.	Kidney stone (decoction)
Pariiri	<i>Arrabidaea chica</i>	Used as a home remedy for inflammation of the uterus, conjunctivitis and anemia	Anemia (decoction)
Pirarucu:	<i>Kalanchoe pinnata Lam</i>	Used for wound healing, gastritis and is also able to fight eye inflammation and bacteria	Contact foot Chilb
Cat nail (shell)	<i>Uncaria tomentosa</i>	It has antibacterial, anti-inflammatory, antiviral, contraceptive, depurative, diuretic, vermifuge properties, indicated for arthritis, it also acts in cases of asthma.	Mixed use decoction (AVC)
Black sesame (Seed)	<i>Sesamum indicum</i>	Indicated in cases of abdominal cramps, diarrhea, rheumatism, tachycardia, regulates the intestine, cleans the skin, serves as a bactericide.	Macerated (stroke, headache)
Earth orange (Sheets)	<i>Citrus aurantium</i>	Anti-inflammatory, antibacterial, fungicidal, vascular stimulant properties.	Diabetes, anemia, rheumatism.
Sucupira bean	<i>Pterodon emarginatus</i>	Fights asthma, ovarian and uterine cysts, organic weakness, diabetes, sore throat, spasmodic pain, wounds, bleeding, inflammation, rheumatism, syphilis and worms.	Infusion (Ovarian Cysts, Asthma, Sore throat, sores, inflammation).
Amapá milk	<i>Parahancornia aapa</i>	Plant that has good results for gastritis and respiratory problems	Leite (Gastrite e úlceras)
Jatobá (Fruits, peel, resin and sap)	<i>Hymenaea courbaril</i>	It has antibacterial action. Antifungal, Antioxidant, Aperient, Balsamic, Diuretic, Stimulant, Expectorant, Fortifying, Laxative, Pectoral, Tonic and Vermifuge.	Decoction (Lung problems, tuberculosis, inflammation in the urethra)
Andiroba(Seed)	<i>Carapa guianensis</i>	It has anti-cancer properties, strengthens the hair strands, repels insects and treats other problems in the epidermis.	Seed Oil (Anti-Inflammation, Hair Treatment)

Name/Part used	Scientific name	Use mentioned in Literature	Use mentioned by Respondents
Copaiba (Oil)	<i>Copaifera spp.</i>	It treats skin conditions such as dermatitis, acne, herpes, boils, chilblains, insect bites and syphilis, as well as arthritis patients. It has also been shown to have anti-inflammatory, diuretic, antimicrobial, muscle relaxant and cytotoxic effects.	Seed Oil (Anti-inflammatory, aids in healing)
Aloe (Leaf - Mucilage)	<i>Aloe vera (L.)</i>	It is widely used in medicine and medicine, it strengthens the immune system and has anti-inflammatory and antiviral action (properties in the treatment of cancers), it also fights dandruff, prevents wrinkles. It treats cuts and wounds, acne, itchiness, skin blemishes, insect bites, muscle pain, digestive problems, arthritis, sinusitis and asthma.	Mixed use juice (gastritis, aids in hair treatment, aids in healing)
Mint (sheets)	<i>Mentha L.</i>	The leaves contain anti-cancer, anti-fungal and analgesic properties.	Mixed use decoction (sore throat, flu)
Holy grass (fresh leaves)	<i>Cymbopogon citratus</i>	It serves as analgesic action, blood clotting, relieves muscle spasms, reducing all symptoms related to abdominal pain, headaches, joint pain, digestive tract spasms, muscle cramps, stomach pain.	Bath, mixed use. Headache, flu and colds Decoction.
Canarana	<i>Costus spicatus</i>	It has astringent, antimicrobial, anti-inflammatory, depurative, diuretic, emollient, sweating and tonic action.	Decoction (urine infection)
Juca	<i>Libidibia férrea</i>	The medicinal properties of jucá contain astringent, anti-diarrheal, healing, sedative, tonic, anti-inflammatory, antiseptic, expectorant and aphrodisiac action.	Infusion (sore throat, high breath, flu, pharyngitis, bronchitis, pneumonia)

4. CONCLUSION

The interviewees have considerable knowledge about medicinal plants, mentioning 48 species of plants used to treat various diseases, with different forms of preparation, among the most cited were decoction, tea, bath and juice.

Despite all the knowledge, ethnobotany is still a new study that needs to be expanded in order to recover the knowledge that over time is being lost, thus preserving wisdom and knowing the use of plants for medicinal purposes.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Cassas F, Silva DS, Barros C, Reis NFC, Rodrigues E. Medicinal, spice and toxic plant beds as a health promotion tool in the Botanical Garden of Diadema, SP, Brazil. *Revista Ciência Ext.* 2016;12(2):37-46. Available: https://ojs.unesp.br/index.php/revista_proex/article/view/1337/1229. Accessed on 22 July 2021.
2. David M, Pasa MC. Medicinal plants and ethnobotany in Várzea Grande, AGRARIAN ACADEMY, Centro Científico Knowing - Goiânia, v.5, n.9; for. 2018 419 MT, Brazil. *Interactions, Campo Grande.* 2015;16 (1): 97- 108. DOI: 10.1590/1518- 70122015108.
3. Lopes CR, Almasy JAA, Armond C, Silva F, Casali VWD. Tea leaves. Viçosa: UFV. 2005. Moraes MEA, Santana GSM. Aroeira-do-sertão: a promising candidate for the treatment of gastric ulcers. *Func.* 2001;3:5-6.
4. Duarte MCT. Antimicrobial activity of medicinal and aromatic plants used in Brazil. *MultiScience Magazine.* 2006;7.
5. Simões CMO, Schenkel EP, Simon D. The slicing guide weeps from herbs: 40 natural recipes for your perfect health. Rio de Janeiro: Campús; 2001.
6. Vale NB. Does pharmacobotany still have a place in modern anesthesiology? *Brazilian Journal of Anesthesiology.* 2002;52(3): 368-380. Available: <https://www.scielo.br/j/rba/a/tKmKr7Cqt7FMwV5zZTGV7Fc/?format=pdf&lang=pt>. Accessed on June 22, 2021.
7. Figueiredo, G.M. Ethnobotany of Atlantic Forest coastal communities. II. Diversity of plant uses in Sepetiba Bay (CE Brazil). *Human Ecology.* 2009;25:353-360.
8. Maciel MAM, Pinto AC, Junior VFV, Grnberg NF, Echervarria A. Medicinal plants: the need for multidisciplinary studies. *New Chemistry.* 2002;25(3):429-438. Available: <https://www.journaljeai.com/index.php/JEAI/article/view/30710/57737> Accessed on 21 July 2021. DOI: 10.1590/S0100-40422002000300016.
9. Verdejo ME. Participatory rural diagnosis: DRP practical guide. Brasília: MDA / Department of Family Agriculture. 2010;62.
10. Annichino GP, Imamura CRA, Mauad MA, Medeiros LA, Morita I, Towata EA. Home medicine in seven locations in the region of Bauru, SP. *Public Health Cad.* 1986;2(2):150-66. Available: <https://www.scielo.br/j/csp/a/yKQMk4WTMzcgdHJCMcktkVg/?format=html&lang=pt>. Accessed on: July 22, 2021. DOI:10.1590/S0102-311X1986000200004.
11. Macedo AF, Oshiiwa M, Guarido CF. Occurrence of the use of medicinal plants by residents of a neighborhood in the city of Marília-SP. *Journal of Basic and Applied Pharmaceutical Sciences.* 2009;28 (1):123-128.
12. Medeiros MFT, Fonseca VS, Andreato RHP. Medicinal plants and their uses by the farmers of Reserva Rio das Pedras, Mangaratiba, RJ, Brazil. *Acta Botanica Brasilica.* 2004;18(2):391-399.
13. Giraldo M, Hanazaki N. Use and traditional knowledge of medicinal plants in Sertão do Ribeirão, Florianópolis, SC, Brazil. *Acta Botanica Brasilica.* 2010;24:395-406. Available: <https://www.scielo.br/j/abb/a/DcKnBTV5Dt4jYtF7ps6nWzL/?forma=pdf&lang=pt> >. Accessed on 27 July 2021

© 2021 Sousa et al.; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:

The peer review history for this paper can be accessed here:
<https://www.sdiarticle4.com/review-history/73721>