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Original Article

Ethnobotanical and ethnopharmacological study of medicinal plants used by a traditional community in Brazil's northeastern

Estudo etnobotânico e etnofarmacológico de plantas medicinais utilizadas por uma comunidade tradicional do nordeste brasileiro

P. K. A. Magalhães[a,b], E. N. Araujo[a], A. M. Santos[a], M. B. Vanderlei[c], C. C. L. Souza[a], M. S. Correia[a,d], S. A. Fonseca[a], J. M. J. S. Pavão[a], M. A. Souza[a], J. G. Costa[a], A. F. Santos[a,e] and T. J. Matos-Rocha[a,b*]

[a] *Centro Universitário Cesmac, Maceió, AL, Brasil*
[b] *Universidade Estadual de Ciências da Saúde de Alagoas – UNCISAL, Maceió, AL, Brasil*
[c] *Universidade Federal de Alagoas – UFAL, Arapiraca, AL, Brasil*
[d] *Instituto Federal de Alagoas – IFAL, Maceió, AL, Brasil*
[e] *Universidade Estadual de Alagoas – UNEAL, Arapiraca, AL, Brasil*

Abstract

The aim of this research is to make a survey of the socio-environmental characteristics and the ethnobotanical study of medicinal plants used in a traditional community in the Brazilian Northeast, Alagoas. The study was made based on visits with the application of a questionnaire with questions related to the socio-economic element and on the diversity of plants used in herbal medicine. The research was made from March/2019 to February/2020, where families and interviewed plant exhibitors were interviewed for botanical identification. The studied community, which were 24 interviewees, was compiled by residents of the Quilombola community from Pau D'arco in Arapiraca city - Alagoas. Residents interviewed, 15 (62.5%) attended between 56 to 80 years, 11 interviewees about 46% were born in the community and 13 (54%) had a fundamentally incomplete nature. At the end, there were mentioned 30 plant species used for phytotherapeutic purposes, from which presents bigger usage as plants against arterial hypertension (*Salvia rosmarinus* Schleid), diabetes Mellitos (*Croton heliotropiifolius* Kunth), pain and inflammation (*Alternanthera tenella* Colla), present the biggest number of species in the community. The species cited are related to numerous medicinal uses, among which there will be predominant associations associated with cardiovascular and inflammatory processes. The tea is the main way of preparing plants. It is perceived that medicinal plants are only widely used by this Quilombola community of and growth of the crops in the backyard are considered a tradition.

Keywords: ethnoknowledge, traditional knowledge, folk medicine, traditionalism.

Resumo

Esta pesquisa teve como objetivo realizar um levantamento das características socioambientais e estudo etnobotânico de plantas medicinais utilizadas por uma comunidade tradicional do nordeste brasileiro, Alagoas, Brasil. O estudo se deu por meio de visitas com aplicação de um questionário contendo perguntas relacionadas aos fatores socio-econômicos e sobre a diversidade das plantas utilizadas como medicinais. O trabalho foi realizado no período de março/2019 a fevereiro/2020, onde foram entrevistadas famílias e catalogadas amostras de plantas para identificação botânica. A população estudada, com 24 entrevistados, foi composta por moradores da comunidade Quilombola Pau D'arco da cidade de Arapiraca - Alagoas. Dos moradores entrevistados, 15 (62,5%) apresentavam idade entre 56 e 80 anos, 11 dos entrevistados cerca de 46%, são naturais da comunidade e 13 (54%) possuíam ensino fundamental incompleto. Ao todo, foram citadas 30 espécies de plantas utilizadas para fins terapêuticos, das quais apresentam maior utilização as plantas contra a hipertensão arterial (*Salvia rosmarinus* Schleid), diabetes Mellitos (*Croton heliotropiifolius* Kunth), dor e inflamação (*Alternanthera tenella* Colla). As espécies citadas estão relacionadas a inúmeras utilizações medicinais, entre os quais predominaram as doenças associadas ao aparelho cardiovascular e processos inflamatórios. O chá é principal forma de preparo das plantas. Percebe-se que as plantas medicinais são amplamente utilizadas por essa comunidade quilombola e o cultivo no quintal é considerado uma tradição.

Palavras-chave: etnoconhecimento, conhecimento tradicional, medicina popular, tradicionalidade.

*e-mail: tmatosrocha@cesmac.edu.br
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1. Introduction

The use of vegetal species to treat diseases, remote from ancient knowledge, coming from different generations, which incorporates new uses and practices, as the years go by. It is noted to notice that some traditional communities have a wide ethnobotanical field, using plants as raw materials to cure many diseases, in a safe and sustainable manner, in balance with the conservation of the environment (Modro et al., 2015). This knowledge remains present in the national culture; although it is seen that deculturalization has been happening fast and aggressively every day, especially in Quilombola communities.

Traditional Quilombola communities have a huge legacy of caring for the environment and using their natural resources for therapeutic purposes, such as medicinal plants. In this context, emphasizing the definition of Oliveira et al. (2009), to provide knowledge about plants as ethnobotany, he highlights that it is healthy to study the direct interrelationships between human beings and the plant environment, observing that the traditions of a folk says a lot about the way they care for and cultivate the environment around them. In this way, verifying that medicinal plants interact significantly with social, economic, cultural and environmental aspects, reaching the most varied dimensions of sustainability, it opens the way for the use and conservation of ecosystems, besides valuing the culture of traditional communities, reducing negative impacts (Modro et al., 2015).

This cultural heritage, passed down from generation to generation by their descendants, confronts the uncontrolled advance of technology, consumerism, objectivity and speed to solve problems, each day more voracious, help the devaluation of this Quilombola knowledge. Every day more medications appear, which can be easily bought at drugstores, leading, so, people to choose the ease with which they find the medication, weakening and devaluing the use of plants as a cure and/or treatment. It is needed that there is an appreciation of this knowledge, a historical and cultural recovery of these traditions, so that the next generations recognize themselves and appreciate themselves as Quilombola people, taking pride and recognition to keep this legacy alive (Boscolo and Galvão, 2019).

Seeking to maintain tradition and knowledge about medicinal plants conserved by Quilombola communities, the present work aims to a research over the socioenvironmental characteristics and ethnobotanical study of medicinal plants used by a traditional community in the northeastern of Brazil, Alagoas.

2. Materials and Methods

2.1. Study area

A cross-sectional, exploratory-descriptive study was made, based on the network of relationships, also known as Snowball method (Rêgo et al., 2016; Boscolo and Galvão, 2019) in the Quilombola Pau D'arco Community, located in the countryside of the county of Arapiraca-AL, in the backyards of the houses and in the areas of cultivation of medicinal plants, within the community. Its territorial limits are: at North with the state highway AL-110, separating it from a village named Cangandu, to the south with Lago da Perucaba, and on the other edge the farm Sapucaia.

On December 5th, 2006, the community acquired the self-recognition certificate, which enabled it on February 7th, 2007 to be certified as a Quilombola community by Fundação Cultural Palmares, according to data from the Institute of Land and Agrarian Reform of Alagoas - ITARAL, according to Araujo's (2018) analysis, currently with 320 families registered as Quilombola remnants, according to registration information from the community Quilombola association, data from 2018. The Quilombola Pau D'árco community is 2km away from AL 110. Approximately 12km away Arapiraca's downtown. The sampling was linear, where each participating recommended another one, in the community, who grows and/or uses medicinal plants at home, totalling a sample of 24 residences and 72 types of herbs collected, of which 30 were feasible the analysis and registration at the Environmental Institute of Alagoas (IMA).

2.2. Obtaining sociodemographic data and the usage of medicinal plants

Data were collected between March/2019 and February/2020. The data collection and sample identification were made as follows: Introduction of the proposal (research objective, step by step of the visits and the sample collection) to the Quilombola community along with the legal representatives of the Quilombola association community of the Pau D'arco. Visits to the houses of the families registered at the association, delimiting the sample, who cultivated and used medicinal plants in their houses. Each family that were visited, signed the Free and Informed Consent Term, as soon as the questions from the pre-structured questionnaire were answered, aiming to obtain a survey of the sociodemographic characteristics of the community, in addition to the botanical characteristics of the plants used for medicinal purposes and their therapeutic indications; and subsequently the interviewed family, indicated another family that cultivated and used medicinal plants, so on, until the cycle starts all over again, which indicates the end of the sample delimitation, "snowball" method (Rêgo et al., 2016; Boscolo and Galvão, 2019), totalling 24 interviewed families, who use medicinal plants in their houses.

2.3. Technical analysis of cultivated medicinal plants

Taking into account the medicinal plants which grown in the community, the characterization and identification of the samples began, and then starting the collection period. The samples were registered by photos with their respective identifications then 3 samples of each herb were taken, according to the requirements of the Institute of the Environment of Alagoas - IMA, placed in wooden presses, wrapped in newspaper, and tied with strings. During the collection some data were being filled out and requested. The collected samples were sent for drying at UFAL's greenhouse (Federal University of Alagoas - Campus Arapiraca), which took 4 to 8 days to dry and

to ready for the next step. The samples were organized, separated and specified, according to the data obtained with the Quilombola community, following the parameters for requesting samples from the herbarium of the IMA, sewn on A3 sheets, with line 100 and a description of the sample, also with the image taken at the collection site, subsequently wrapped in wax paper, sirurgical paper and a cardboard, with the researcher's identification and the sample number. Later, they were deposited for technical analysis at IMA to obtain the classification and scientific nomenclature of the plants found in the Quilombo. However, some samples collected were not viable for identification and tipping, due to not having flowers or fruits, which would help in the identification. Other samples had fungi and had to be discarded, totaling the identification and tipping of 30 samples. The information collected was classified and organized using descriptive statistics, the data were tabulated and organized in tables, through the average, percentage, and absolute frequency.

3. Results and Discussion

3.1. Socio-environmental characteristics

The data found in the research bring up some social peculiarities, which are like the data from other research (Araújo, 2018; Anjos, 2017). Analyzing in details the questions raised, it is observed that the racial ethical denomination from the studied sample, vary in these proportions: With a predominance of 54% of the interviewees calling themselves black and 21% swarthy, during this question it was observed that some of the interviewees felt inferiorized when referring to the black color, calling themselves "swarthy", some mentioned during the interview: "black people have a very dark skin and mine is lighter, so I'm swarthy". Based on the repetition of this argument, this item was added to the data analysis.

The general profile of the analyzed public reveals that most of them are people with ages between 56 and 80 years old, widows, black woman, retired, with incomplete elementary school, who were born in the community. However, this is only an analysis of the majority of the research data, but there were several identifications of social profiles, such as: single and divorced people who live with children, and use medicinal plants; elderly couples alone, but who are responsible for supporting the home of their children or grandchildren. The social diversity found reflects a situation of economic dependence, partial or total, mainly related to the elderly who have pension. Even if these dependents do not live in their homes, they mostly live next door or very close to their parents' house. Data described in Table 1.

The profile of residents and Quilombolas of the community, in the studied sample is configured as follows: 46% were born in the community, 29% were born in other locations and came to the Quilombo as children, because one their parents were part of the community, 25% started their life in the community after marriage, as the partner was from the community. Among those who were born or children came to the quilombo, the knowledge was passed on by family members. Those who came because of the wedding brought their own form of cultivation and use in addition to their pre-existing knowledge.

3.2. Identification and use of medicinal plants for therapeutic properties

When the question was directed to the use of medicinal plants, replacing the use of pharmaceutical medications, it was observed that 50% of the interviewees mentioned that they have already used herbs instead of using prescription drugs, and 50% said they use herbs as a supplement. As shown in the Table 2.

Regarding the health problems that most affect the studied sample, it is highlighted that approximately 67% of the studied population has arterial hypertension, accompanied or not by other comorbidities, being this the main factor of illness among the studied population. Which leads to another significant data, the type of herbs most used among the public studied; the vast majority are diuretic, calming and digestive teas, which in physiological analyzes help to decrease blood pressure parameters of circulation.

In the homes of approximately 42% of interviewee, all residents of the house use medicinal plants for some therapeutic purpose, in 33% of the sample only the interviewee and another member use the plants, that member is most often the partner or child (or grandson) who lives with the interviewee, and in 25% of the interviews it was identified that only the person responsible for the plants makes use of them for medicinal purposes. Interestingly, this data also reflects the level of dependence of families, at the houses where the interviewees become the only source of income, characterizing a greater use of medicinal plants among its members. Which in the houses where other individuals supplement family income, the use of medicinal plants is mostly restricted to the interviewee and one more member of the family, relating the economic dependence to cultural dependency.

It is observed that the highest occurrence of medicinal plants, at the houses, is related to the treatment of hypertension, diabetes, pain and inflammation and act as tranquilizers, such as: "meracillin" *Alternanthera tenella* Colla (Amaranthacea), "sabacaitá" *Ocimum basilicum* L. (Lamiaceae) and "lemongrass" *Lippia alba* (Verbenacea). As shown in the Table 3.

Some are unusual for most interviewees, such as the use of the "jurema de cabloco" *Vitex* sp. (Lamiaceae), for the treatment of infertility according to information collected. This feature reveals that many therapeutic properties of some plants are not used in the same way by all ones who use them. This factor can be related to the interpretation given, to the information passed through the generations, or even to the influences of external members on aspects of the community's cultural genesis. The use of plants by individuals in the community is consolidated by experiences passed on by parents, grandparents, in-laws, who, by transmitting a teaching, keep the tradition and cultivation of these plants alive. All the formulations for use described below are the result of interviews with the researched sample.

Table 1. Sociodemographic profile of users of medicinal plants in the Quilombola community from Pau D'arco - Arapiraca - Alagoas – Brazil.

VARIABLE		No	%
Age	31-42	2	8.5
	43-55	3	12.5
	56-80	15	62.5
	>80	1	4
	Don't know or do not want to answer	3	12.5
Marital Status	Married	4	17
	Single	1	4
	Common-law married	7	29
	Widow	11	46
	Separated/ divorced	1	4
	Don't know or do not want to answer	0	0
Racial-Ethnic Self-definition	Black	13	54
	Mulatto	4	17
	White	1	4
	Swarthy	5	21
	Yellow	1	4
	Don't know or do not want to answer	0	0
School Education	Illiterate	8	34
	Incomplete primary education	13	54
	Incomplete high school	2	8
	Complete high school	1	4
	Incomplete Higher Education	0	0
	Don't know or do not want to answer	0	0
Occupation	Housework	2	8
	Farmer	4	17
	Freelance	2	8
	Unemployed	1	4
	Retired	15	63
	Don't know or do not want to answer	0	0
Family Income	No income	1	4
	Social Program	2	8
	< 1 minimum wage	4	17
	1 to 2 minimum wage	14	59
	> 1 minimum wage	2	8
	Don't know or do not want to answer	1	4
How for long belongs to the community	Born at the community	11	46
	After the wedding	6	25
	> 30 years old	7	29
	Don't know or do not want to answer	0	0

Subtitles: No = number of samples; % = percentual.

Table 2. Use of medicinal plants for therapeutic purposes in the Quilombola community from Pau D'arco - Arapiraca - Alagoas – Brazil.

VARIABLE		No	%
Self-reported diseases	Deny diseases	2	9
	H.A.S.	7	29
	H.A.S. + D.M.	4	17
	H.A.S. + D.M. + Spine	2	9
	H.A.S. + Spine	3	13
	D.M. + Spine	1	4
	Spine	1	4
	Osteoporosis	1	4
	Mental illness	2	8
	Others	1	4
Use of medicinal plants as a substitute for allopathy or together	Only plants	12	50
	Together	12	50
People using medicinal plants in the house	Only the interviewee	6	25
	Interviewee + a member	8	33
	Every house	10	42

Subtitle: n = number of the samples; % = percentual; H.A.S. = Systemic arterial Hypertension; D.M. = *Mellitus* Diabetes.

Some of the plants and their uses were placed by more than one interviewee; as for example, "solda osso" *Ruellia* sp. (Acanthaceae), the interviewees use it by letting the plant dry, use a handful (approximately a small spoon), put it in hot water and muffle it, take it three times a day, and it helps to recover from fractures and sprains. Vasconcelos (2014) suggests in his research that this plant has a great antimicrobial potential, but nothing related to bone calcification. But "venlante", also known as "Velame" *Croton heliotropiifolius* Kunth (Euphorbiaceae), used in the community to treat inflammation with fever and helps in the treatment of diabetes, uses the leaves (they do not need to be dry) to put them in the boiling water for one minute, turn it off and take it twice a day. Brito et al. (2016) brings a study on the therapeutic properties of this plant, revealing the great antimicrobial and antioxidant potential.

Another plant used is the "Sambacaitá", *Ocimum basilicum* L. (Lamiaceae), also known as "manjericão" is used for inflammation. According to the interviewee, mix the leaves (without the stem) with milk in a blender, and drink during the day, you can put in the refrigerator, or you can remove the leaves, put them in water and then on the stove until the water changes color, and it is still warm, it helps to "loosen the mucus", it can be used to wash wounds and cuts, it helps on the healing. Recent research shows that there are actually anti-inflammatory effects on the composition of this herb (Guez et al., 2017). The "sabugueira" *Sambucus nigra* L. (Adoxaceae) is used with a spoon of dried flowers, in a cup of boiling water, leaves and smothers for about 10 to 15 minutes, and takes three times a day; it can be used to gargle when the throat is inflamed and the inhalation of the vapor helps to "loosen the phlegm" according to cited information (AIC) - and it is also used for compresses and washes for skin infections. Laffita and Castillo (2011) say that some communities use this herb to treat Alzheimer's, diabetes, epilepsy, measles and other sick people, but what is scientifically proven is its action as an antioxidant and anti-inflammatory related to allergic processes, flu and the treatment of hypercholesterolemia.

The "feijão andu" *Cajanus cajan* L. Huth. (Fabaceae) is used as a tranquilizer (inhaling the steam) and to relieve headaches; using the sanitized sheet, grinded and placed in a glass, add boiling water, cover, and when it gets cold, take it three times a day, it helps to quickly eliminate headaches from labyrinthitis; toasting the seed and grinding it, it creates a powder similar to coffee, then put boiling water, strain it and drink it, it helps to lower the blood pressure too, as well as tea (AIC); Cordovil et al. (2015), in a review of the medicinal properties of this plant, mention significant findings related to the inhibition of red blood cell sickness, helping to treat anemia and hemolytic diseases. The "Fedegoso" *Senna macranthera* (Dc. Ex Collad.) H.S.Irwin and Barneby (Fabaceae), also known as black coffee, is also used to treat high blood pressure and labyrinthitis, along with quilombolas. All parts of the plant can be used, but the most used in the community is the seed, and in small quantities, approximately one teaspoon of the seed powder, diluted in half a liter of boiling water, strain and drink during the day (AIC); recent research on the use of the plant in bovine mastitis has suggested that it has a similar response to antibiotics, in the treatment of the problem, they also relate a significant diuretic use, however similar studies in humans have not been found (Silva et al., 2019).

"Noni" *Morinda citrifolia* L. (Rubiaceae), used by those interviewed, mainly to fight cancer, as follows: beat the fruit with water in a blender and drink the juice, for a maximum of 15 days, according to Leite et al. (2018), states that studies are still scarce on this species of plant, but it has significant antioxidant activity, however its applications are still questionable, due to the small amount of studies referring to this plant in humans . The "metiolate" *Jotropha multifida* L. (Euphorbiaceae), also known as a blood-flower, is used as a wound healer, breaking a plant leaf and placing the liquid in the wound; A study suggests that the plant has a tendency to accelerate the healing process, after verification with rats in the laboratory, also indicating that more studies are needed on its herbal properties (Buch et al., 2008).

"Orai-por-nove" *Pareskia grandifolia* Haw. (Cactaceae), also known as "ora-pro-nóbis" used to relieve body pain and inflammation, can be consumed raw, leaves, flowers and fruits; a study carried out in 2010, states that this plant has an antioxidant action, proven by laboratory tests (Sim et al., 2010). The "alecrim" *Salvia rosmarinus* Schleid. (Lamiaceae), used for throat inflammation and to help prevent stroke, tea can be made by infusing a branch of the plant, into a liter of boiling water, putting out the fire and leaving it stuffy until it gets warm, so it can be ingested. Borges et al. (2019) reinforce, in laboratory studies, the

Table 3. Identification of speciman of medicinal plants collected, according to family, species and use in the Quilombola community from Pau D'arco - Arapiraca - Alagoas - Brazil.

ID. PLANTS	NAME OF PLANT	FAMILY	SPECIES	USED PART	WAY OF USAGE	THERAPY ACTION
1	Solda-osso	Acanthaceae	*Ruellia* sp.	All the plant	Tea (infusion)	Broken bone
2	Velande	Euphorbiaceae	*C. heliotropiifolius*	Leave	Tea	Diabetes and inflammation
3	Endro	Apiaceae	*A. graveolens*	Stem and Leave	Tea	Inflamamtion/ Anemia
4	Sambacaitá	Lamiaceae	*O. basilicum*	Leave	Tea / Shower	Anti-inflammatory
5	Sabugueira	Adoxaceae	*S. nigra*	Dried Flower	Tea (boiled)	To fever and inflammed throat
6	Beladona	Verbenaceae	*L. alba*	Stem and Leave	Tea	Depressant and diabetes
7	Feijão- andu	Fabaceae	*C. cajan*	Leave/ Seed	Tea / coffee	Headache/ labyrinthitis / depression/ High blood pressure
8	Fedegoso	Fabaceae	*S. macranthera*	Seed	Coffee	labyrinthitis / High blood pressure
9	Noni	Rubiaceae	*M. citrifolia*	Fruit	Fruit juice with water	High blood pressure / cancer /diabetes
10	Metiolate	Euphorbiaceae	*J. multifida*	Leave	Leave broth	Healing
11	Orai-por- nove	Cactaceae	*P. grandifolia*	Leave, flower and fruits	Raw	Pain
12	Alecrim	Lamiaceae	*S. rosmarinus*	Stem and leave	Raw, tea, Infusion - gurgle	Hoarseness, prevent stroke
13	Avenca	Pteridaceae	*A. capillus-veneri*	Stem and Leave	Tea and infusion	Postpartum confinement and swollen
14	Favaca-de-vaqueiro	Lamiaceae	*O. basilicum*	Leave and root	Tea	Cramps, depressant, indigestion
15	Vick	Lamiaceae	*M. arvensis* .	Leave	Grind and smoth	Cramps and inflamation and stomache
16	Hortelã-da-folha- miúda	Lamiaceae	*M. suaveolens*	Leave	Tea	Flu, cramps, inflammation, indigestion.
17	Alfinete/ agulha	Asparagaceae	*A. densiflorus*	Stem and Leave	Boiled Tea	Prevent stoke
18	Transagem	Plantaginaceae	*P. major*	Leave	Tea	Uterus, urinary and ovary infection/ cancer
19	Tipi	Phytolaccaceae	*P. alliacea*	Leave	Tea, "lambedor" and shower	Reinvigorate and gives energy, pain in the articulation
20	Zezinho	Urticaceae	*P. microphylla*	Stem and Leave	Juice (mixed with water)	Pneumonia, diabetes and kidney stone.
21	Murici	Malpighiaceae	*B. stipulacea*	Peel, leave and fruit	Tea of the leave/juice of the fruit	Fever, Inflammation and cancer
22	Mentruz	Amaranthaceae	*D. ambrosioides*	Leave and stem	Mix with milk	Intestinal worms and cough
23	Quebra-pedra	Phyllantaceae	*P. niruri*	Dried leave and root	Tea 3x a day	Kidney stones and diabetes

Table 3. Continued...

ID. PLANTS	NAME OF PLANT	FAMILY	SPECIES	USED PART	WAY OF USAGE	THERAPY ACTION
24	Espada-de-são-jorge	Asparagaceae	*S. trifasciata*	Leave	Tea to the shower	Reinvigorate and gives you energy
25	Favaca-pequena	Lamiaceae	*M. pectinatum*	Leave and stem	Tea	Cramps
26	Meracilina	Amaranthaceae	*A. tenella*	Leave	Tea	Pain and inflammation
27	Arnica	Asteraceae	*S. chilensis*	Leave, flower and stem	Cataplasm and infusion	Backache, hurts and twists
28	Erva-cidreira	Lamiaceae	*M. officinalis*	Leave	Tea	Cramps and as depressant
29	Jurema-de-cabloco	Lamiaceae	*Vitex* sp.	Leave and seed	Tea of the seed or leave	Bath seat / headache/ infertility/ controls the period/ ease the heat from the menopause/ reduce the male libido
30	Pião-roxo	Euphorbiaceae	*J. gossypiifolia*	Leave and stem	Tea to the shower	Cicatrizing and muscular relaxant, kills the larva of dengue.

anti-inflammatory power of this plant. "Avenca". *Adiantum capillus-veneris* L. (Pteridaceae), used for "break-up" and "swelling in the body" (SCI), place approximately one spoonful of leaves in half a liter of boiling water, let it cool, strain, and take it twice a day, Ibraheim et al. (2011) mention in their studies the antimicrobial, anti-inflammatory and hypoglycemic action found in this plant in others of the same family.

"Favaca de Vaqueiro", *Ocimum basilicum* L. (Lamiaceae), also known as "alfavaca de vaqueiro", used as a natural tranquilizer, for menstrual colic and for indigestion. They use the crushed root and leaves, put it in boiling water, wait five minutes then turn it off, strain and drink it three times during the day after meals. Research made in 2019 brings to light the antioxidant action of this plant, from which oil is mainly extracted (Ramírez-Aragón et al., 2019). "Vick", *Mentha arvensis* L. (Lamiaceae), used for stomach pain, cramps and inflammation, preparing a tea, using 4 to 6 fresh, grinded leaves, in a cup of boiling water, leave for about three minutes, smother and drink. According to Peixinho et al. (2017), in their study on the action of menthol, affirm its fungicidal action, including in the protection of some wine plantations, have not been found.

The "hortelã da folha miúda", *Mentha suaveolens* Ehrh. (Lamiaceae), used for flu, cramps, inflammation and indigestion; to make the tea, it is needed to just put 3 tablespoons of dried mint leaves in 250 ml of boiling water and cover it for 5 minutes, strain and drink the tea 2 to 4 times a day; a study made in 2015 reveals many biological properties in this plant, including cytotoxic, antimicrobial, antioxidants, anti-inflammatory, hypotensive and insecticide, among others (Božović et al., 2015). To prevent "spillage" (AIC) the plant called "Pin" *Asparagus densiflorus* (kunth) Jessop (Asparagaceae), is highly effective. According to the interviewees, just use the stem and leaves to make an infusion tea, let it rest, and take during the day; the article by Boonsom et al. (2012), mentions the anti-inflammatory and aphrodisiac action of this plant.

"Transagem", *Plantago major* L. (Plantaginaceae), a plant widely used in the community for uterus and ovaries infection, urinary infections and it also helps to prevent and fight cancer in this region (SCI); placing the leaves in a container with approximately 150mL of boiling water and letting it stand for about 3 minutes; subsequently strain and ingest up to 3 cups a day; Nazarizadeh et al. (2013) bring to light in their study, the anti-inflammatory and anti-cancerous action of this plant. "Tipi", *Petiveria alliaceae* L. (Phytolaccaceae), used in the community, to encourage and give energy, also used for joint pain; as follows: put the leaves in hot water for 10 minutes, to calm down just feel the steam (inhalation), for the pains you need to drink the tea; Lateef et al. (2018) state that this plant has potential action, antioxidant, anticoagulant, antibacterial and antifungal, with excellent in vitro results. However, it was not verified in humans yet.

Another plant used is the so-called "zezinho", also known as "brilhantina", scientifically called *Pilea microphylla* (L.) Liebm. (Urticaceae). According to the interviewees, it helps in the treatment of diabetes, pneumonia and kidney stones, it is enough to put a handful of plant in a liter of boiling water, drown it out and drink it three times a day; an article found on its therapeutic properties, states that antioxidant and mutagenicity actions have been found that suggest an effective action against cancer cells, but also warns that prolonged and discriminated use can cause serious damage to health (Gomes, 2009). The "murici" *Byrsonima stipulacea* A. Juss. (Malpighiaceae), which according to the reports of the interviewees, helps in cases of fever, inflammation and in the fight against cancer, just taking the tea from the peel's tree helps to lower the fever. It's necessary to make the tea and drink it three times a day, or the juice of the fruit and take it three

times a day too. Santos (2016) highlights in his research the antioxidant action of murici. Another plant used by Quilombolas and the "mentruz". *Dysphania ambrosioides* (L.) Mosyakin & Clemants (Amaranthaceae), for the treatment of worms and persistent cough; the stem and leaf, mixed with milk, in a blender and take once or twice a day. Zohra et al. (2019), in his research, revealed potential antioxidant, cytotoxic, antimicrobial and antidiabetic action potentials of this plant.

"Quebra-pedra", *Phyllanthus niruri* L. (Phyllantaceae), used in the community, for the treatment of kidney stones and to fight diabetes, tea by infusion taken from 1 to 2 cups a day, analysis of the concentrations of aqueous extracts of dry leaves of *P. niruri* showed cytotoxic and genotoxic, for some species of rats, guiding the need to make deeper investigations on the action of this plant and exposure to different treatments (Neves et al., 2014). The "espada-de-são-jorge", *Sansevieria trifasciata* Prain (Asparagaceae), used to cheer up and invigorate the energies; making the tea for sprinkling bath, with a leaf crushed in hot water, once a day. Mien et al. (2015) state that this plant has in its structure Saponins, which are steroidal glycosides, capable of assisting in the control of inflammatory processes in the respiratory tract, sprain, wounds, ulcers, among others, however the study identifies the amount of this glycoside, but the effectiveness of these substances has not been identified yet.

The "favaca-pequena", *Mesosphaerum pectinatum* (L.) Kuntze. (Lamiaceae), used for menstrual cramps, drinking the tea by infusion 2 to 3 times a day, a study proves its anti-inflammatory action, however there is little information about the anti-cancer properties of the plant (Silva et al., 2017). "Meracilina", *Alternanthera tenella* Colla (Amaranthaceae), used against pain and inflammation, with tea by infusion, leaving stuffy for 10 minutes and drinking it three times a day. Antioxidant activities of this plant were proven in the study by Brandão et al. (2014).

The "arnica", *Solidago chilensis* Meyen (Asteraceae), used for back pain, injuries and sprains; the flowers are used to make the poultice and place on the wound. The infusion should be used to wet the compresses and place in the region of pain or bruising, tea is not taken, according to the interviewees' guidelines. Souza et al. (2018) highlight the plant's anti-inflammatory action, highlighting the need for further studies on it. "Lemongrass", *Mellissa officinalis* L. (Lamiaceae), used by the interviewees to fight cramps and as a natural tranquilizer, tea made by infusion is taken two to three times a day. According to Negrea et al. (2017), this plant has antioxidant and antifungal characteristics, seconds of these performed in the laboratory.

Another plant used is the "jurema-de-caboclo" *Vitex* sp (Lamiaceae), used for a clean bath, headache, infertility, regulates the menstrual period, decreases the menopause heat and decreases the male libido, ingesting the tea by infusion, twice a day. Monteiro et al. (2015) in presentation at the 4th National Meeting of Chemistry, brings the results of his research on Vitex, showing healthy results of the plant in antioxidant actions and with larvicidal activities against *Aedes aegypti*. The "pião roxo", *Jatropha gossypiifolia* L. (Euphorbiaceae), is used as a healing and muscle relaxant when made with tea; when the branch is placed in standing water, it helps to kill the dengue larva (AIC). Among the main activities identified in the article by Silva et al. (2014), the anti-hypertensive, anticancer, antimicrobial, healing, anti-inflammatory and analgesic activities stand out.

It was observed that most of the interviewees use medicinal plants more frequently for three situations: high blood pressure, diabetes, pain, and inflammation according to Tables 4 and 5 below. The other uses are seasonal and only when there is a prior analysis of the interviewees about the health situation, or some diagnostic evidence about the pathology. It is important to note that most studies on medicinal plants are experiments made in laboratories, placing the need for further research in relation to the uses already verified by the community.

Highlighting that a large part of the identified plants have antioxidant action, proven in laboratory experiments with and without animals, pointing out that this specific action acts significantly in the deleterious action of free radicals on cells, and preventing damage to DNA cell and reducing the chances of appearance of diseases such as cancer (Santos, 2016; Souza et al., 2018). Regarding the use of "Fedegoso", *Senna macranthera* (Fabaceae), for the control of *Vitex* sp. there was no specific indication for this action, but studies carried out on bovines, revealed that it has a promising action against bovine mastitis, showing if a resolving antibiotic regarding this demand, without forgetting to emphasize that the diuretic action found can be an effective tool to help reduce edema (Silva et al., 2019).

The use of *Phyllanthus niruri* L., known as "quebra-pedra", used in the quilombola community, to control diabetes mellitus and dilute kidney stones, is scientifically proven with great cytotoxic and genotoxic action; revealing that the plant has harmful properties in relation to specific cells, which can affect the integrity of the cellular genetic material, either beneficially or maleficently, so its use is recommended that it is not continuous (Neves et al., 2014). The individuals who use it, in the quilombo, followed this orientation, so that the therapeutic tea is used in intercalated periods, to avoid the appearance of other health problems (AIC).

The therapeutic effects referred to by medicinal plants, by the interviewees, have some scientific proof already made about them. However, not all effects are scientifically proven, but make it clear that a lot of things are still unknown about its herbal effects, opening up possibilities for further research. It is important to emphasize that the Quilombolas, although they were experiencing "free" the maintenance of their habits, culture and traditions, were influenced by the "white" society that permeated them, significantly influencing their view of the world, their concepts, their convictions, which quickly adapt to the comforts of life and the influences of other cultures, leaving a mask or most of the time forgetting the legacy of their own cultural dynamics. Exposed to the conceptions of a "white" society, they reinvent and reconfigure their own convictions, which no longer fit their historical origins, and also do not conform to the "pre-established" standards, but are re-signified, restructured, and rebuilt day by day, as cultures clash and reinvent themselves, this situation is resignified.

Table 4. Home use of medicinal plants for the treatment of chronic non-communicable diseases, in Quilombo Pau D'árco and relationship with scientific evidence.

USAGE	SPECIES	DERIVATIVE NAME	FAMILY	SCIENTIFIC USAGE	REFERENCE
Diabetes mellitus	*C. heliotropiifolius*	Velande	Euphorbiaceae	Antimicrobial and antioxidant	Brito et al. (2016)
	L. alba	Beladona	Verbenaceae	Weight regulation, reduce glucose and cholesterol levels	Acevedo-Estupiñan et al. (2019)
	M. citrifolia	Noni	Rubiaceae	Antioxidant activity	Leite et al. (2018)
	P. microphylla	Zezinho	Urticaceae	Antioxidant and effective action against cancer cells	Gomes (2009)
	Phyllanthus niruri	Quebra Pedra	Phyllantaceae	Cytotoxic and genotoxic	Neves et al. (2014)
	C. cajan	Feijão andu	Fabaceae	Treatment of Anemias	Cordovil et al. (2015)
	S. macranthera	Fedegoso	Fabaceae	Antibiotic and diuretic action in cattle	Silva et al. (2019)
Systemic arterial hypertension	*M. citrifolia*	Noni	Rubiaceae	Antioxidant activity	Leite et al. (2018)
	S. rosmarinus	Alecrim	Lamiaceae	Anti-inflammatory	Borges et al. (2019)
	A. densiflorus	Alfinete	Asparagaceae	Anti-inflammatory and aphrodisiac	Boonsom et al. (2012)

Source: Research data, 2019.

Table 5. Home use of medicinal plants to treat of pain and inflammation, in Quilombo Pau D'arco, and the relation with scientific evidence.

SPECIES	DERIVATIVE NAME	FAMILY	SCIENTIFIC USAGE	REFERENCE
A. graveolens	Endro	Apiaceae	Antifungal	Vieira et al. (2019)
O. basilicum	Sambacaitá	Lamiaceae	Anti-inflammatory	Guez et al. (2017)
S. nigra	Sabugueira	Adoxaceae	Antimicrobial and antioxidant	Laffita and Castillo (2011)
C. cajan	Feijão-andu	Fabaceae	Treatment of anemias and hemolytic diseases	Cordovil et al. (2015)
P. grandifolia	Orai-por-nove	Cactaceae	Antioxidant	Sim et al. (2010)
M. arvensis	Vick	Lamiaceae	Fungicidal action on plants .	Peixinho et al. (2017).
M. suaveolens	Hortelã-da- folha-miúda	Lamiaceae	Antimicrobial, antioxidants, anti-inflammatory, hypotensive and insecticide.	Božović et al. (2015)
P. major	Transagem	Plantaginaceae	Anti-inflammatory and anticancer.	Nazarizadeh et al. (2013)
P. alliacea	Tipi	Phytolaccaceae	Antioxidant, anticoagulant, antibacterial and antifungal	Lateef et al. (2018)
B. stipulacea	Murici	Malpighiaceae	Antioxidant .	Santos (2016).
A. tenella	Meracilina	Amaranthaceae	Antioxidant	Brandão et al. (2014).
S. chilensis	Arnica	Asteraceae	Anti-inflammatory	Souza et al. (2018)
Vitex sp.	Jurema-de- cabloco	Lamiaceae	Antioxidants and larvicides	Monteiro et al. (2015)

It was observed that of the 320 families in Quilombo do Pau D' arco only 7.5% cultivate and use medicinal plants, noting that 67% of them are between 56 and 80 years old, emphasizing that the majority of young people are not interested in learning, nor to keep the cultivation of medicinal plants alive, this is a trend that has diminished over the years, it is observed by the size of the detected sample that they use and grow herbs for herbal purposes, a number composed mostly of elderly people, who apparently will not have for those who leave this legacy. Another salutary factor is the comparison of the use of medicinal herbs with the educational factor, in an analysis of the study population, is that the higher the educational level, the less interest in knowing the cultivation of medicinal plants.

We can conclude that in the Quilombola Pau D'arco community, 30 medicinal plants were collected on guided tours and just over 25 uses were mentioned for the set of medicinal species. The families Lamiaceae and Euphorbiaceae were the most representative from the point of view of the number of medicinal plants sampled and it was possible to identify 17 families in a universe of 30 registered medicinal plants. The three species most cited by the population belong to the families Lamiaceae, Euphorbiaceae and Phytolaccacese.

In general, the amplitude of medicinal species recorded in the quilombola community Pau D'arco is consistent with the great variability of uses referred to for these plants and brings cultural aspects related to health in quilombos. Especially for specialists, the set of information presented reinforces the importance of knowledge and practices in their relationship with medicinal plants in the health and disease processes experienced by this community.

In the majority, the most used part of medicinal plants is the leaf and, among the different forms of preparation and administration, cooking, maceration, compresses were the most mentioned. Although the relationship between "forest" medicines and industrialized remedies, it was noted that these drugs are present in communities, but apparently are little used, because preference is given to local medicine.

Finally, care with the approach of researchers and the relationship of identity was fundamental for data consolidation, for this, a time of coexistence, the establishment of a relationship of trust and, later, ethnobotanical research allowed knowledge, culture and social relations to be well established.

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