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Knowledge and use of medicinal plants by a group of users attended at Basic Health Care Unit of São Sebastião neighborhood, in Palhoça - Brazil

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ABSTRACT
Ethnopharmacological relevance: To provide safety and quality of medicinal plants uses by the Brazilian population, it is propitious to institute these practices in public health measures. This study aimed to interpret and analyze the use of medicinal plants in the public health service at the basic health care unit of São Sebastião, Palhoça/SC, Brazil. Materials and methods: The informants were selected by the snowball method, with a non-probabilistic sampling (n=30). Sociodemographic and ethnobotanical data were recorded through semi-structured interviews, along with photo identification of the botanical species. Descriptive statistics analyzed sociodemographic data and answers over the general use of medicinal plants. In addition, quantitative analysis was carried out with Relative Importance (RI) and Informant Consensus Factor (ICF) indexes, and diseases were organized according to ICD-10. Results: Among the interviewees, 86.6% were women and 96.6% were over 30 years of age. The most mentioned plant part used in the preparations was the leaf (81.9%), and the most referred method of preparation was infusion (69.5%). A total of 133 species were mentioned, and 47 of these (33%) were confirmed by comparison with the reference book's images. The most important species was Achyrocline satureioides (Lam.) DC. (RI = 92.5%) and the most referred ailment was mental and behavioral

disorders (ICF = 0.66). Conclusion: The results are important for the health professionals of the UBS of São Sebastião, Palhoça/SC-Brazil, to supply qualified and culturally suitable health services.
***Keywords**: Ethnobotany, Medicinal Plants, Basic health care unit.*

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ABBREVIATIONS	
ANVISA	Brazilian National Health Surveillance Agency
EMA	European Medicines Agency document
ICF	Informant Consensus Factor
ICD-10	International Classification of Diseases, 10th edition
RI	Relative Importance
SUS	Brazil's Unified Health System
UNISUL	University of Southern Santa Catarina

I. Introduction

The traditional use of medicinal plants is known as that which is based throughout the history of usage by human beings, demonstrated in technical and scientific documentation, without known or informed evidence of risk to the users health; the World Health Organization (WHO) measures in favor of the use of traditional medicine have been reinforced in the last decades and, since 2002, this organization launched the document entitled "WHO Strategy on Traditional Medicine" that supported the development, in its member countries, of policies that guarantee safety, effectiveness, quality, reasonable use and population access to these practices (WHO, 2013).

In this scenario, approximately 80% of the Brazilians use medicinal plant-based products to take care of their health (Brazilian Ministry of Health, 2012). The search for this therapeutic possibility has increased in society, determining a complementary option to allopathic treatment; this may be correlated with deficiencies in conventional medicine, for example, the increase in iatrogenic and chronic diseases, a weak relationship between physician and patient, the search for comprehensive health care, and financial issues (Brazilian Ministry of Health, 2008).

The need to include these practices through the Policy on Integrative and Complementary Practices was identified because, according to the principles of Brazil's Unified Health System (*Sistema Único de Saúde*, SUS), there must be a commitment to provide universal, comprehensive, equitable, continuous and resolving care services to the population, according to social needs. That is, the health system must assist appropriately, from the context in which the population is inserted (Pain et al., 2011). Basic health care service is defined as the user's first contact with the SUS assistance network (Brazilian National Council of Health Secretaries, 2015) and it is centered on families, guides the necessary basic care, and promotes community participation, based on continuous, comprehensive and self-coordinated health care services (Brazilian Ministry of Health, 2015). The execution of basic health services within the SUS is achieved due to the professional teams that work in the basic health care units, which are composed of medical professionals, nurses, nursing technicians, pharmacists and community health agents and, since 2004, oral health teams (Malta et al., 2016).

Therefore, these teams are responsible for monitoring families from defined geographical areas, encouraging and carrying out community health activities and services (Carvalho et al., 2016). Health team family members can also promote measures through social insertion in the community, creating bonds with the population served and providing their autonomy and an integral health service, according to SUS precepts (Pires et al., 2017).

In the region where the present study was carried out, a proposal for a partnership between the University of Southern Santa Catarina (UNISUL) with the São Sebastião basic health care unit in Palhoça/SC-Brazil (image 1, panel A), started in December 2016 from a counterpart by UNISUL for choosing this unit as a field to carry out practical activities for students in health subject areas. The family health team at this unit sought help from the University of Southern Santa Catarina (UNISUL) professors because they were interested in implementing phytotherapy, starting with a medicinal garden (image 2). In March 2018, the extension project (named FitoSUS) was institutionally approved. Since then, it has been developing educational activities carried out in this unit in the São Sebastião neighborhood, being subsequently expanded to the Psychosocial Care Center for Alcohol and Drugs. Still, the project follows three university pillars: teaching, research and extension; and its activities include the health professionals, the population of the area described, undergraduate students in the health area, and post-graduate students in Health Sciences, where the present study is inserted.

Studies on medicinal plant species among the population are important for strengthening the practices of medicinal plants and phytotherapy in the context of the Policy on Integrative and Complementary Practices.

Research studies in ethnobotany and ethnopharmacology are serving as important tools to define various aspects about the use of medicinal plants and phytotherapy (Albuquerque & Hanazaki, 2006; Diago, 2011). In the last decades, this approach aimed at understanding the empirical uses of plant species, the development of social groups and the health system in which they are inserted, in addition to conserving traditional knowledge, flora and fauna (Vandebroek, 2013; González et al., 2017). These studies enable this understanding due to an interdisciplinary approach, which addresses several social, environmental and health disciplines, which help in formulating hypotheses regarding pharmacological activities and the active ingredients responsible for the therapeutic effects of several species (Bolson et al., 2015).

The selection of medicinal plants for research based on the argumentation of a given therapeutic effect in human beings can constitute a valuable shortcut for the discovery of new drugs of plant origin since their traditional use can be understood as a pre-screening for its therapeutic utility in humans (Friedman et al., 1986; Bolson et al., 2015). Given what has been discussed above, the present work aimed at evaluating which are the medicinal plants used by a group of users assisted by the basic health unit of the São Sebastião neighborhood, in Palhoça/SC-Brazil, and by residents who use the basic health care unit at São Sebastião/Palhoça, SC, Brazil, as well as to determine what the main therapeutic indications are (body systems and International Classification of Diseases, ICD-10) and ways of using these medicinal plants.

II. Materials And Methods

2.1 Study area

The survey area is located at an average altitude of three meters above sea level, at 27º38'42" latitude and 48º40'04" longitude. The city of Palhoça in the state of Santa Catarina has a territorial extension of 395 km^2 and, according to the IBGE, its estimated population is 175,272 inhabitants composed by different ethnic groups, mainly descendants of Europeans, Africans and indigenous peoples (Brazilian Institute of Geography and Statistics, 2019).

The São Sebastião neighborhood is located in the western portion of the Palhoça county, close to where the mountains of the Atlantic forest of Santa Catarina begin. The neighborhood played an important role in the ancient history and there is a single basic health care unit, which currently serves 1,800 families, most of whom have lived there for many years and are still able to maintain their rural habits, which tend to disappear with the urban interventions that are taking over the region.

2.2. Sample size and data collection

The participants of this study were members of different families that were routinely visited by the health community agents of São Sebastião's basic health care unit, aged 18 years old or older, and who agreed to participate in this study. An intentional and non-probabilistic sampling, according to the snowball method (Bailey, 1994; Ong et al., 2018), was applied to select specific members of the neighborhood recognized by their knowledge on the use of medicinal plants. The initial selection of key informants was guided by local health community agent's indications, who pointed out participants with the specific profile for the present research. The interviewees were then asked to indicate new subjects who had the desired characteristics and so on, until there were no new indications of participants or until the new indications did not offer new information to the analysis.

Data were collected between November 2017 and November 2018, initiating after approval from the Ethics and Research Committee of the University of Southern Santa Catarina (CAAE 74076817.4.0000.5369), and after the authorization of the Palhoça City Health Department. Subsequently, meetings were conducted at São Sebastião's basic health care unit with researchers and the Family Health team to perceive their expectations and therefore outline the questionnaires as well as the schedule of the visits.

The visits were made monthly in four different neighborhood areas under the community health agent's responsibility and the individuals who agreed to be part of the study signed a written consent form. Firstly, the selected informants were questioned about their sociodemographic profile and a semi-structured interview with open and closed questions was answered concerning the knowledge and use of plant species for medicinal purposes. The interviews addressed questions such as local vernacular names of the plants, habitats of the plants, plant parts used, methods of preparations and medicinal uses of the plants. Furthermore, to increase the collected data's consistency, the plant species were confirmed by comparing the referred plant to its image and characteristics described in the book "Medicinal Plants in Brazil: Native and Exotic" (Lorenzi and Matos, 2008), adopted as reference for this study. This book was selected for being published by an author of recognized experience in the area, as well as for presenting a great diversity of plants of the national flora, including those adapted to our country. Moreover, the plants mentioned by the interviewees that were not found in the reference book or did not correspond to the images and characteristics presented were treated in this study as "unidentified".

2.3. Data processing and analysis

The data collected was organized into a database in the 2016 Microsoft Excel Program. The sociodemographic information was analyzed using descriptive statistics by calculating absolute and percentage numbers for each variable. Moreover, for the botanical data analysis, the number of plant species, as well as the number of informants, were counted and the ailments mentioned were classified according to the International Classification of Diseases (ICD-10) from the World Health Organization into 10 categories (ICD, 2016). To estimate the importance of a species among the informants, the Relative Importance (RI), according to Bennett and Prance (2000), was calculated using the following formula: RI=NSC+NP, where NSC = number of ailments category reports for an individual species divided by the number of all ailments categories reports to the most mentioned species and NP = number of pharmacological properties mentioned for an individual species divided by the number of all pharmacological properties mentions to the most cited species. The Informant Consensus Factor (ICF) (Trotter and Logan, 1986) was used as an indicator of agreement among the informants for uses of medicinal plant species on particular ailments and is calculated using the following formula: ICF = [nur-nt]/[nur-1]; where nur = number of use reports for a plant species in a certain disease category and nt = number of all species reported for medicinal use in a certain disease category. Furthermore, to identify admittedly uninformed medicinal plant species and possible agreements in the mentioned medicinal purposes, a comparison was made between the collected data and the Brazilian National Health Surveillance Agency (ANVISA, 2019) documents, as well as with the European Medicines Agency (EMA, 2020) document.

III. Results

Among the group of users assisted by the basic health unit of the São Sebastião neighborhood, 30 of them were interviewed, of which 86.6% were female and 13.3% were male, aged between 21 and 85 years old. The most common preparation method was infusion (69.5% reports), followed by decoction (17.3% reports). Regarding the plant parts used, the leaves presented the majority of reports (81.9%). Of the 30 informants, 10 of them collected medicinal plants in the wild, while nine collected medicinal plants cultivated in their yards. The less frequently collecting sites mentioned by other informants were personal farms and street markets.

During the surveys, 142 medicinal plants were documented and 91 of these (64.1%) were identified botanically by comparing the photos and characteristics available in the reference book used in this study (Lorenzi and Matos, 2008). The identified species and the ethnobotanical data are summarized in Table 1.

The highest RI values were obtained for *Achyrocline satureioides* (Lam.) DC. (local names: Macela, Marcela, Macela-do-campo, Marcela-do-campo or Marcela-galega; RI = 92.5%), *Cronopus didymus* (L.) Sm. (local names: Mastruço, Mastruz or Mentruz; RI = 84.5%), and *Cymbopogon citratus* (DC.) Stapf. (local names: Capim-limão, Capim-santo, Cidreira, Capim-cidreira or Cidró; RI = 84.5%). Table 2 shows the summarized RI values above 1.00, indicating important species for selected informants.

Concerning the ICF indicator, most plant species were used for mental and behavioral disorders (ICF = 0.66), followed by diseases of the digestive system (ICF = 0.66). The highest ICF values can be seen in Table 3. Moreover, comparing medicinal plants therapeutic indications by the population (Table 4) with national recommendations of Brazilian National Health Surveillance Agency (ANVISA, 2019), as well its folk names, part used and extraction preparation of the plant, it was obtained, respectively, 65.7%, 35.6%, 75.5% and 60.0% of agreement. Regarding the international recommendations of European Medicines Agency (EMA, 2020), the data comparison can be seen in Table 5.

Moreover, comparing therapeutic indications of medicinal plants by the population studied with national recommendations of the Brazilian National Health Surveillance Agency (ANVISA, 2019), 65.6% of the agreement was obtained; it is worth mentioning that only 19.8% of the species reported by the informants in this study were found in ANVISA documents. Regarding the international recommendations of the European Medicines Agency (EMA, 2020), the data comparison can be seen in Table 5.

IV. Discussion

The present study demonstrates that most of the interviewees were female, according to other ethnobotanical studies (David and Pasa, 2012) that also described a similar context of women being the majority among the participants. This might be observed because many women still care more about domestic tasks than men, especially because they are the ones who normally prepare food and take care of family health. However, some authors did not find gender differences in relation to knowledge on medicinal plants, or even men demonstrated more knowledge about medicinal plants than women (De Santana et al., 2016; Pedrollo et al., 2016). Therefore, this is a complex approach because there are many variables to be considered and, for this reason, these aspects are interpreted in different ways for each population regarding its context and characteristics.

Like other authors (Souza et al., 2014), the individuals in this study were aged 21 to 85 years old with a median of 60.5 years of age, and 96.66% of individuals over 30 years of age. These results corroborate with the

perception that knowledge and use of plant species for medicinal purposes stands out among the older population and that knowledge transmission might occur from one generation to another, being significantly lower in the younger generations. Also, this may be because individuals over the age of 30 are more responsible for their health (Eddouks e al., 2017). Thus, ethnobotanical studies that compile the traditional knowledge for its documentation and preservation are necessary.

The leaves have been mentioned as the most used part in several studies worldwide and this was also found in this research (Ghorbani, 2005; Sadat-Hosseini et al., 2017). Some assumptions are possible, such as the fact that leaves and aerial parts play a fundamental role in photosynthesis and thus produce a higher number of metabolites (Vijayakumar et al., 2015). Besides, the leaf is easier to collect than the roots, for example, and they are constantly available throughout the year. Among the preparation methods, the most cited was the infusion method followed by decoction, and this result agrees with many other studies (Dei Cas et al., 2015; Santos et al., 2016). In the infusion preparation method, it is advisable to use the softest parts of the plant such as leaves, flowers, inflorescences and fruits, which present volatile active principles sensitive to water and prolonged heat; however, decoction is the preferred method for the hardest parts of the plants, such as bark, roots, seeds and stems (Vásques et al., 2014). Guidance on medicinal plants' preparation is very important to guarantee that the active principle will be effectively extracted and to avoid toxicity risks.

Ethnobotanical studies commonly perform exsiccates for the correct taxonomic identification of the plants, since popular names can lead to misunderstandings (Lorenzi and Mattos, 2008); in addition, a particular species can have different names depending on the geographic region, culture or even personal issues. We can observe in this neighborhood more than one popular name for the same species, such as Artemisia, also known as Artemigia or Artemigem (*Artemisia vulgaris* L.), and *Chamomila recutita* (L.) Rauschert, known as both Camomila and Maçanilha. In the same way, different plant species are known by the same popular name. For example, in this study, the popular name Capim-limão was used to denominate three different species: *Cymbopogon citratus* (DC) Stapf., *Lippia alba* (Mill) N.Br. (Verbenaceae) and *Melissa officinalis* L. (Labiateae). Therefore, photo identification is considered a limitation in this study.

It is worth mentioning that some misunderstandings may also occur in the classification of the symptoms and diseases mentioned by the participants, because there is no data classified and organized in specific popular languages. Therefore, it is interesting to record rigorously detailed data, since a consistent database, specific to the traditional medical knowledge of each region, would be more appropriate; some systems classify diseases and symptoms by body system, such as the ICD-10 among others (Shunga et al., 2016). In order to classify the terms used by the individuals to indicate symptoms, the researcher detailed and contextualized the data according to ICD-10, such as several studies in the area of ethnobotany (Santana et al., 2016; Borcard et al., 2015).

Regarding the RI index, it mainly identified species that revealed different therapeutic uses and, therefore, the highest versatility. Based on the number of therapeutic uses of a species and the number of ailments that they can treat, the species with the highest RI value was *Achyrocline satureioides* Lam. DC., which is native to southern Brazil. Pharmacological studies proved the effectiveness of its medicinal properties for the prevention of oxidative stress of the skin, antibacterial activity, anti-glioma and, also, some flavonoid components only identified in this species with anticancer activity (Balestrin et al., 2016; Pedra et al., 2018; Souza et al., 2018). In the present study, this species was mainly mentioned for stomach ache and intestinal gas, followed by a headache. This result agrees with Brião et al. (2016), in which the species most pointed in their study was *Achyrocline satureioides*, mainly mentioned for disorders of the digestive system; and with Simões et al. (1988), which proved the analgesic activities of this species. Given the widespread use of this species in Brazil and worldwide, two studies by Salgueiro and collaborators (2016) and Rivera and collaborators (2004) evaluated the toxicological activities of the *Achyrocline satureioides* species, demonstrating that the infusion and the aqueous extract of its leaves, in the concentrations used, presented considerably low levels of toxicity and absence of genotoxic potential.

The *Cajanus cajan* (L.) Millsp. and *Cymbopogon citratus* (DC.) Stapf. species had the second-highest RI index, mainly used for calming effects. This popular use is corroborated by some studies (Almeida et al., 2011; Goes et al., 2015) that prove the mild sedative activity of both species. Also occupying the second place of the highest RI value is the *Cronopus didymus* (L.) Sm. species, which is known by the interviewees as Mastruço, Menstruço or Mentruz. This species has been studied for its therapeutic uses and, in the literature, it is mainly found on phytoremediation topics, which is a recent technology for soil decontamination (Sidhu et al., 2017). However, some studies corroborate its antifungal, anti-inflammatory, antioxidant and anticancer properties (Shakoor et al., 2018; Noreen et al., 2017). In this study, among the nine therapeutic indications mentioned for this species, the most cited were related to bone ailments, in general inflammatory and infectious problems, and agree with the studies by Coelho de Souza and collaborators (2004) and Shakoor and collaborators (2018). Thus, this result proposes that these species are the most popular among the informants in this study. Also, several therapeutic effects were verified in the literature. For this reason, they can be

considered relevant for inclusion in the medicinal garden of São Sebastião's basic health care unit and future educational activities.

Regarding the ICF index, it varies from 0 to 1 and low values indicate that, for a given category of disease, the difference between the number of cited uses and the number of indicated species is low, suggesting that the mentioned species were proposed for few symptoms of a specific disease of a certain body system, as well as that the plant is probably selected randomly or without sharing information among the individuals (Gazzaneo et al., 2005). High values, on the other hand, suggest that, for a given disease category, the difference between the number of uses and the number of species mentioned is high, indicating that those species were specified for various symptoms of ailments of the same body system and that there must be a selection of these species for a given symptom through the exchange of knowledge among individuals of the same area (Gazzaneo et al., 2005).

The results of the ICF index exposed a great, current and global public health challenge regarding mental disorders, especially anxiety disorders, as identified in the present study and in a survey carried out by Souza and colleagues (2017), which, besides, highlights that Brazil ranks first in the prevalence of anxiety disorders and fifth in the number of depression cases. Based on this, it is important that the public health system supports individuals who suffer from this disorder, and this could be attained through group activities, which are already taking place in São Sebastião's basic health care unit, which is embracing local residents to help implementing phytotherapy, through activities such as "Friday - the day to care for the garden". The psychological benefits linked to nature's interaction, mainly horticulture, are already proven by several recent controlled and randomized clinical trials (Soga et al., 2016; Vujcic et al., 2017).

It is worth mentioning that the species compiled in this study were suggested to treat primary symptoms and diseases, which is in accordance with the health service purposed by basic health care in the SUS. Thus, most of the health problems mentioned in this study are solved at the primary care and plant resources level show up as great allies in this context. That is why the importance of complementing primary care with phytotherapy and medicinal plants has been highlighted.

Finally, there was a significant number of therapeutic properties in compliance between the data collected and the national and international references. The high level of agreement with the ANVISA document (ANVISA, 2019) and, on the other hand, a lower agreement between the uses indicated in the EMA (EMA, 2020) document, may be due to the fact that the first is based on traditional and popular uses adopted in Brazil, where the research took place. This data might be useful for supporting more studies that confirm the safety and quality of various medicinal plants that have been used for a long time, although not having been scientifically studied. Therefore, studies aiming at this significant number of species insufficiently addressed are imperative and necessary to corroborate and protect knowledge on the use of medicinal plants in the areas surrounded by biomes rich in plant species. Especially Brazil's biomes, which have been emphasized in ethnobotany research studies, such as in the Atlantic forest, which surrounds the São Sebastião neighborhood in Palhoça, SC.

V. Conclusions

The research encourages and gathers data for São Sebastião's basic health care unit administrators in planning health measures, linked to a more qualified care service and culturally appropriate to the territory in question. Particularly concerning the access to health services, the knowledge about the most important species showed agreements among the interviewees, directing the most interesting plants to be inserted in activities and programs of the local health service. In addition, detailed characteristics of local residents sensitize and contextualize health professionals, engaging them and the population so that the health-disease process becomes a responsibility of both parties, but mainly the users, who must assume a self-care conduct.

As future perspectives, the results obtained should contribute to developing phytotherapeutic guides, therapeutic booklets and activities concerning phytotherapy and common ailments oriented to this specific group of people. Projects of this nature also contribute to the consolidation of the Policy on Integrative and Complementary Practices on the national scene and are expected to stimulate field research. Additionally, this study should be an urge for new ethnobotanical studies in the state of Santa Catarina, with comparison purposes, or even the subsequent repetition of the same study in the São Sebastião neighborhood to conduct a longitudinal study. Furthermore, it is expected that there will be a reinforcement of the importance of conserving Brazilian biodiversity and recovering the traditional knowledge associated with it.

Disclosure Statement

All authors disclose any actual or potential conflict of interest within three (3) years of beginning this work.

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Table 1 – Ethnobotanical data of identified medicinal plants reported by a group of users attended at the Basic Health Care Unit of São Sebastião neighborhood in Palhoça, Brazil (2018).

Number	Botanical species[1]	Folk names	Part used	Extract preparation	Number of informants
1	*Achillea millefolium* L.	Pronto alívio; Novalgina; Mil-folhas	leaf	decoction; infusion	4
2	*Achyrocline satureioides (Lam.) DC*	Macela; Macela-do-campo; Marcela-do-campo; Marcela-galega	flowers/ leaf	infusion; bath/leaf	9
3	*Aloe vera* (L.) Burm. F.	Babosa	leaf juice	topical application	3
4	*Aloysia triphylla* Royle	Cidrão; Cidró	leaf	infusion	2
5	*Alternanthera brasiliana* (L.) Kuntze	Penicilina	leaf	infusion	3
6	*Annona muricata* L.	*Graviola*	leaf/fruit	juice intake/ ingestion	3
7	*Apium graveolens* L.	Salsão	leaf	infusion	1
8	*Aristolochia cymbifera* Mart. & Zucc	Cipó-mil-homens; Guaco	whole plant/ leaf	alcohol maceration/infusion or decoction	4
9	*Artemisia absinthium* L.	Losna	leaf	infusion; maceration	4
10	*Artemisia annua* L.	Losna; Losna-verde; Artemísia	leaf	decoction	1
11	*Artemisia vulgaris* L.	Artemísia; Artemígio; Artemígia; Artemigem	leaf	infusion	2
12	*Averrhoa carambola* L.	Carambola	leaf/ fruit	infusion/ juice intake	1
13	*Baccharis articulata* (Lam.)	Carqueja	branches	infusion	1
14	*Bauhinia forficata* Link	Pata-de-vaca	leaf	infusion	1
15	*Bidens pilosa* L.	Picão; Picão-preto; Caramona	leaf/whole plant	infusion; decotion/ bath	3
16	*Cajanus cajan* (L.) Millsp.	Feijão-andu	leaf/ fruit	infusion/ infusion	4
17	*Calendula officinalis* L.	Calêndula	flower	infusion	1
18	*Carica papaya* L.	Mamão (macho)	leaf	infusion	1
19	*Centella asiatica* (L.) Urb.	Pata-de-mula	leaf	infusion; bath	2
20	*Chamomila recutita* (L.) Rauschert	Camomila; Maçanilha	leaf/ flower	decoction; infusion/ decoction; infusion	6
21	*Chenopodium ambrosioides* L.	Mastruço; Mastruz; Mentruz	whole plant	decoction	1
22	*Cinnamomum verum* J. Presl	Canela	peel	infusion	1
23	*Cissus verticillata* (L.)	Insulina; Uva	leaf; root	cataplasm	2
24	*Cnicus benedictus* L.	Cardo-santo	leaf	infusion	1
25	*Coffea arabica* L.	Café-verde; Café	leaf	infusion	1
26	*Copaifera langsdorffii* Desf.	Copaíba	leaf; peel, fruit	oil (topic or intake)	1
27	*Costus spicatus* (Jacq.) Sw.	Cana-do-brejo	leaf	infusion	3
28	*Cronopus didymus* (L.) Sm.	Mastruço; Mastruz; Mentruz	leaf	cataplasm; infusion	5
29	*Cucurbita pepo* L.	Abóbora	leaf	infusion	1
30	*Cuphea carthagenensis* (Jacq.) J.F. Macbr	Sete-sangrias	leaf	infusion; decoction	4
31	*Cymbopogon citratus* (DC.) Stapf	Capim-limão; Cana-limão; Capim-cidreira; Capim-santo; Cidreira; Cidró; Erva cidreira	leaf	decoction; infusion	12
32	*Daucus carota* L.	Cenoura	leaf	infusion	1
33	*Echinodorus grandiflorus* (Cham. & Schltdl.) Micheli	Chapéu-de-couro	leaf	infusion	1
34	*Equisetum giganteum* L.	Cavalinha	leaf	infusion	1
35	*Eucalyptus globulus* Labill.	Eucalipto-limão	leaf	infusion; inhalation	3
36	*Eugenia uniflora* L.	Pitanga	leaf	infusion; ingestion; decoction	3
37	*Euphorbia tirucalli* L.	Avelós; Pau-pelado	branches	infusion; juice intake	2
38	*Foeniculum vulgare* Mill.	Erva-doce; Funcho	leaf/ seed	decoction; infusion/ decoction; infusion	8
39	*Fridericia chica*	Crajiru	leaf	infusion	1

	(Humb. & Bonpl.) L.G. Lohmann				
40	*Fumaria officinalis* L.	Fel-da-terra	leaf	infusion	1
41	*Handroanthus impetiginosus* (Mart. Ex DC.) Matos	Ipê-roxo	tree bark	decoction	1
42	*Hyptis atrorubens* Poit.	Poejo; Poejinho	leaf	syrup; decoction	3
43	*Illicium verum*	Anis; Anis-estrelado	fruit	infusion	1
44	*Justicia pectoralis* var. stenophylla Leonard	Anador	leaf	infusion; decoction	2
45	*Kalanchoe pinnata* (Lam.) Pers.	Folha-da-fortuna; Flor-da-fortuna; Saião	leaf	cataplasm; infusion	2
46	Laurus nobilis L.	Louro	leaf	infusion	5
47	*Lavandula angustifolia* Mill.	Lavanda	leaf	infusion	
48	*Libidibia ferrea* (Mart. Ex Tul.) L.P. Queiroz	Jucá	pod	decoction	1
49	*Lippia alba* (Mill.) N.E. Br.	Melissa; Salva-do-brasil; Cidreira; Erva-cidreira	leaf	infusion; decoction	4
50	*Malva sylvestris* L.	Malva	leaf/ whole plant	decoction; bath; infusion/ infusion; topical; syrup	6
51	*Maytennus ilicifolia* (Schrad.) Planch.	Espinheira-santa	leaf	decoction; infusion;	4
52	*Melissa officinalis* L.	Cidreira; Erva-cidreira; Melissa; Salva-do-brasil; Melissa; Salva-do-brasil; Cidreira; Erva-cidreira	leaf	infusion; decoction	11
53	*Mentha arvensis* L.	Hortelã	leaf	decoction; decoction	2
54	*Mentha pulegium* L.	Poejo; Poejinho	leaf	infusion	6
55	*Mikania cordifolia* (L. f.) Willd.	Guaco	leaf	syrup	1
56	*Mikania glomerata* Spreng.	Guaco	leaf/whole plant	infusion/ syrup	9
57	*Moringa ovalifolia* Dinter & Berger	Moringa	leaf	infusion	1
58	*Nasturtium officinale* R. Br.	Agrião	leaf	syrup	1
59	*Ocimum basilicum* L.	Hortelã	leaf	infusion	2
60	*Ocimum selloi* Benth.	Alfavaca; Atroveran	leaf	infusion	1
61	*Origanum vulgare* L.	Orégano; Manjerona; Oregão	leaf	infusion; decoction; syrup	3
62	*Passiflora incarnata* L.	Maracujá	leaf/ peel fruit/ pulp	infusion/ infusion/infusion	3
63	*Paullinia cupana* Kunth.	Guaraná	leaf	infusion	1
64	*Persea americana* Mill.	Abacate	leaf	infusion	1
65	*Petiveria alliacea* L.	Guiné	leaf	infusion	1
66	*Petroselinum crispum* (Mill.) Fuss	Salsa; Salsinha; Cheiro-verde	leaf/ root	infusion; decoction/ infusion	4
67	*Phyllanthus niruri* L.	Quebra-pedra	leaf	infusion; decoction	3
68	*Plantago major* L.	Tanchagem; Tansagem; Transagem; Bec-cheiroso	leaf	syrup; decoction; infusion	5
69	*Plectranthus amboinicus* (Lour.) Spreng.	Manjerona; Malvarisco; Malva-do-reino	leaf	infusion; oil (topical)	3
70	*Plectranthus barbatus* Andrews	Boldo	leaf	infusion	7
71	*Plectranthus ornatus* Codd	Boldo-pequeno; Boldo-miúdo	leaf	infusion	1
72	*Psidium guajava* L.	Goiaba	leaf/ leaf sprout/ flower	infusion; decoction/ infusion/ infusion	7
73	*Punica granatum* L.	Romã	leaf	infusion	1
74	*Quassia amara* L.	Pau-tenente; Tenente-josé	leaf	infusion	2
75	*Rosmarinus officinalis* L.	Alecrim	leaf	infusion	6
76	*Ruta graveolens* L.	Arruda; Arruda-fedorenta	leaf	decoction; alcohol maceration	7
77	*Salvia officinalis* L.	Sálvia; Sábia	leaf; stalk	infusion	2
78	*Sambucus australis* Cham. & Schltdl.	Sabugueiro	leaf	infusion	1
79	*Sechium edule* (Jacq.) Sw.	Chuchu	leaf	infusion	1
80	*Siparuna guianensis*	erva-santa	leaf	infusion	1

	Aubl.				
81	*Smilax japicanga* Griseb.	Salsaparrilha	leaf	infusion	1
82	*Solidago chilensis* Meyen	Arnica	leaf; flower	bath; infusion	1
83	*Stachytarpheta cayennensis* (Rich.) Vahl	Gervão-roxo	leaf	infusion	1
84	*Stevia rebaudiana* (Bertoni) Bertoni	Stévia	leaf	infusion	1
85	*Symphytum officinale* L.	Confrei	leaf	to chew	1
86	*Tanacetum vulgare* L.	Catinga-de-mulata	leaf	infusion	1
87	*Taraxacum officinale* F.H. Wigg.	Dente-de-leão	leaf	infusion	1
88	*Thymus vulgaris* L.	Tomilho	leaf	infusion	2
89	*Vernonanthura condensata* (Baker) H. Rob	Boldo-alumã	leaf	infusion	1
90	*Zea mays* L.	Cabelo-do-milho; Cabelo-de-milho; Milho	corn silk	infusion	1
91	*Zingiber officinale* Roscoe	Gengibre; Gengivre	leaf/ root	infusion/ juice intake; infusion; decoction	4

Legend: (*) Identified according to the study (Lorenzi and Matos, 2008).

Table 2- Relative importance values of medicinal plants used by selected informants (2018).

Plant species*	**NSC****	**NP*****	**IR=NSC+NP**	**Percentages**
Achyrocline satureioides (Lam.) DC.	0,85	1,00	1,85	92,50%
Cronopus didymus (L.) Sm.	1	0,69	1,69	84,50%
Cymbopogon citratus (DC.) Stapf	1	0,69	1,69	84,50%
Cajanus cajan (L.) Millsp.	1	0,46	1,46	73,00%
Ruta graveolens L.	0,85	0,61	1,46	73,00%
Malva sylvestris L.	0,71	0,69	1,40	70,00%
Foeniculum vulgare Mill.	0,57	0,69	1,26	63,00%
Rosmarinus officinalis L.	0,57	0,69	1,26	63,00%
Achillea millefolium L.	0,57	0,61	1,18	59,00%
Plantago major L.	0,71	0,46	1,17	58,50%
Chamomila recutita (L.) Rauschert	0,57	0,53	1,10	55,00%
Melissa officinalis L.	0,71	0,38	1,09	54,50%
Cuphea carthagenensis (Jacq.) J.F. Macbr.	0,57	0,46	1,03	51,50%

(*)Identified according to the reference used in the study (Lorenzi and Matos, 2008). (**)NSC: number of ailments category reports for an individual specie divided by the number of all ailments categories reports to the most mentioned specie. (***)NP: number of pharmacological properties mentioned for an individual specie divided by the number of all pharmacological properties mentions to the most cited specie.

Table 3 – Disease categories and informant consensus factor values (2018).

ICD-10	**Nur***	**Na****	**ICF = nur – na/ nur – 1 (0-1)**
Chapter 5: Mental, Behavioral and Neurodevelopmental disorders	37	13	0,66
Chapter 11: Diseases of the Digestive System	67	23	0,66
Chapter 2: Neoplasms	6	3	0,60
Chapter 10: Diseases of the Respiratory System	38	17	0,56
Chapter 14: Diseases of Genitourinary System	29	15	0,50

Legend: (*)Nur: number of reports (**)Na: number of species

Table 4 - Concordance between informants' reports and ANVISA recommendations (ANVISA, 2019).

Plant specie*	**Informants' reports**	**ANVISA recommendation**	**Concordance between therapeutic indications**
Achillea millefolium L.	Cough; Expectorant; Headache; Fever; Heart "twinge"; Flu; Pneumonia; Pain	Appetite stimulant, anti-dyspeptic, anti-inflammatory and anti-spasmodic	yes
Achyrocline satureioides (Lam.) DC.	Fever; Headache; Stomach discomfort; Flu; Swelling; Intestinal gases; Good for the liver; Cough; Anti-inflammatory; Diabetes; Good for the digestive system	Anti-dyspeptic, anti-spasmodic and anti-inflammatory	yes
Aloe vera (L.) Burm. F.	Healing; Hair moisturizer; Burn	Healing	yes
Chamomila recutita (L.) Rauschert	Digestion; Bladder infection; Diuretic; Soothing; Insomnia; Hypertension; Colic	Anti-spasmodic, anxiolytic and mild sedative	yes
Cymbopogon citratus (DC.)	Diuretic; Increases metabolism; Soothing;	Anti-spasmodic, anxiolytic and	yes

Stapf	Colic; Hypertension; Diarrhea; Labyrinthitis; Insomnia; Flu	mild sedative	
Justicia pectoralis var. *stenophylla* Leonard	Headache; Pain	Expectorant	no
Lippia alba (Mill.) N.E. Br.	Cough; Soothing	Anxiolytic, mild sedative, anti-spasmodic and anti-dyspeptic.	yes
Malva sylvestris L.	Sore throat; Antibiotic; Infections; Cicatrization; Colic; Soothing; Flu/Cold; Anti-inflammatory	Expectorant	yes
Maytennus ilicifolia (Schrad.) Planch.	Good for blood circulation; Good for the stomach; Colic; Heartburn; Gastritis; Hiatus hernia	Anti-dyspeptic, anti-acid e protector of gastric mucosa	yes
Melissa officinalis L.	Soothing; Flu; Vermifuge; Good for the memory; Insomnia	Anti-spasmodic, anxiolytic and mild sedative	yes
Mikania glomerata Spreng.	Cough; Flu; Bronchitis; Cold; Good for the lungs	Expectorant	yes
Passiflora incarnata L.	Heartburn; Diabetes; Soothing; Good for the intestine	Anxiolytic and mild sedative	yes
Phyllanthus niruri L.	Good for kidneys; Bowel arrester; Kidney infections; Kidney stone	Urinary lithiasis	yes
Plantago major L.	Bronchitis; Cough; Infections; Anti-inflammatory; Good for the womb; Sore throat	Anti-inflammatory and oral cavity anti-septic	yes
Plectranthus barbatus Andrews	Stomach discomfort; Headache; Digestion; Good for the liver; Good for the stomach	Anti-dyspeptic	yes
Psidium guajava L.	Intestinal gases; Diarrhea	Treatment of acute non-infectious diarrhea and rotavirus enteritis	yes
Rosmarinus officinalis L.	Soothing; Headache; Insomnia; Joint pain; Depression; Anxiety; Angina; Blood circulation; Good for the heart	Anti-dyspeptic and anti-inflammatory	yes
Zingiber officinale Roscoe	Flu; Antibiotic; Good for the kidney	Anti-emetic, anti-dyspeptic, expectorant and kinetosis	yes

Legend: (*) Identified according to the study (Lorenzi and Matos, 2008).

Table 5 - Concordance between informants reports and EMA's international recommendations (EMA, 2020).

Plant species*	**Informants reports**	**EMA's recommendations**	**Concordance between therapeutic indications**
Achillea millefolium L.	Cough; Expectorant; Headache; Fever; Twinge in the heart; Flu; Pneumonia; Pain	Urinary tract and genital disorders; Loss of appetite; Skin disorders and minor wounds; Gastrointestinal disorders	no
Alternanthera brasiliana (L.) Kuntze	Headache; Antibiotic; Menstrual disorders; Discharge; Uterus infections	Gastrointestinal disorders	no
Artemisia absinthium L.	Stomach discomfort; Digestion; Diarrhea; Good for the stomach; Good for the liver.	Loss of appetite; Gastrointestinal disorders	yes
Chamomila recutita (L.) Rauschert	Digestion; Bladder infection; Diuretic; Soothing; Insomnia; Hypertension; Colic	Skin disorders and minor wounds; Gastrointestinal disorders; Cough and cold; Mouth and throat disorders	yes
Eucalyptus globulus Labill.	Headache; Respiratory infection	Pain and inflammation; Cough and cold	yes
Foeniculum vulgare Mill.	Constipation; Intestinal gas; Colic; Diarrhea; Good for the bladder; Diuretic; Insomnia	Urinary tract and genital disorders; Cough and cold	yes
Malva sylvestris L.	Sore throat; Antibiotic; Infection; Flu/Cold; Anti-inflmamatory	Cough and cold; Gastrointestinal disorders	yes
Melissa officinalis L.	Soothing; Flu; Vermifuge; Good for memory; Insomnia	Sleep disorders and temporary insomnia; Gastrointestinal disorders; Mental stress and mood disorders	yes
Passiflora incarnata L.	Heartburn; Diabetes; Soothing; Good for the intestine	Sleep disorders and temporary insomnia; Mental stress and mood disorders	yes

Rosmarinus officinalis L.	Soothing; Headache; Insomnia; Joint pain; Depression; Anxiety; Angina; Blood purifying; Good for the heart	Circulatory disorders; Gastrointestinal disorders	yes
Salvia officinalis L.	Antibiotic; Anxiety	Skin disorders and minor wounds; Mouth and throat disorders; Gastrointestinal disorders	no
Thymus vulgaris L.	Cough; Pain	Urinary tract and genital disorders	no
Zingiber officinale Roscoe	Flu; Antibiotic; Good for the kidney	Gastrointestinal disorders	no

Legend: (*) Identified according to the reference used in the study (Lorenzi and Matos, 2008).