Boletín Latinoamericano y del Caribe de Plantas Medicinales y Aromáticas
ISSN: 0717-7917
editor.blacpma@usach.cl
Universidad de Santiago de Chile
Chile

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Boletín Latinoamericano y del Caribe de Plantas Medicinales y Aromáticas, vol. 16, núm. 3, mayo, 2017, pp. 206-262
Universidad de Santiago de Chile
Santiago, Chile

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Boletín Latinoamericano y del Caribe de Plantas Medicinales y Aromáticas 16 (3): 206 - 262
ISSN 0717 7917
www.blacpma.usach.cl

Artículo Original | Original Article

Ethnobotanical study of medicinal plants in urban home gardens in the city of Abaetetuba, Pará state, Brazil

[Estudio etnobotánico de las plantas medicinales en los jardines de patios urbanos de Abaetetuba, Pará, Brasil]

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Abstract: This was an ethnobotanical study of medicinal plants occurring in home gardens in the northern Brazilian Pará state. We conducted semi-structured interviews with the owners of 233 home gardens selected by probability sampling. We analyzed the data qualitatively, complemented by indices Total Species Diversity and Total Species Equitability (SDtot and SEtot, respectively); Use Value (UVs); Importance Value (IVs); and Informant Consensus Factor (ICF). We identified 124 species within 107 genera and 55 families. Of the medicinal species identified, 17.6% were considered effective in the treatment of Infectious and Parasitic Diseases. The home gardens evaluated harbored a great diversity of medicinal species (SDtot-47.43), although knowledge of the plants was not distributed evenly (SEtot-0.383). *Kalanchoe pinnata* (Lam.) Pers. showed the highest UVs (0.462) and *Lippia alba* (Mill.) N.E.Br. ex Britton & P.Wilson showed the highest IVs (0.104). The highest ICF value (0.94) was for the treatment of Behavioural Disorders.

Keywords: Amazon, folk medicine, urban flora, traditional knowledge.

Resumen: La investigación tuvo como objetivo hacer un estudio etnobotánico de las plantas medicinales en los jardines de patios urbanos de Abaetetuba, Pará, Brasil. Fueron realizadas entrevistas semiestructuradas aplicando 233 formularios a los propietarios de los jardines, seleccionados por muestreo probabilístico. Los datos fueron analizados en un enfoque cualitativo, complementado por los índices Diversidad Total (SDtot) y la Equidad Total de especies (SEtot), el Valor de Uso (UVS), Valor de Importancia (IVS) y el Factor de Consenso del Informante (ICF). Se identificaron 124 especies en 107 géneros y 55 familias. Las indicaciones más frecuentes fueron por enfermedades infecciosas y parasitarias (17,6%). Los jardines de los patios son el hogar de una gran diversidad de especies medicinales (SDtot – 47,43), sin embargo, se observó que el conocimiento acerca de las plantas no se distribuye de manera uniforme (SEtot – 0,383). *Kalanchoe pinnata* (Lam.) Pers. mostró mayor UVS (0.462) y *Lippia alba* (Mill.) N.E.Br. ex Britton & P.Wilson mayor IVS (0,104). El ICF mostró mayor acuerdo para el uso de las plantas en los trastornos de comportamiento (0,94).

Palabras clave: Amazonía, medicina popular, flora urbana, conocimientos tradicionales.

Recibido | Received: February 8, 2016
Aceptado | Accepted: August 6, 2016
Aceptado en versión corregida | Accepted in revised form: September 14, 2016
Publicado en línea | Published online: May 30, 2017.
Declaración de intereses | Declaration of interests: This study received financial support from the Graduate Program in Environmental Science at Pará State University.
Este artículo puede ser citado como / This article must be cited as: IC Palheta, ACC Tavares-Martins, FCA Lucas, MAG Jardim. 2017. Ethnobotanical study of medicinal plants in urban home gardens in the city of Abaetetuba, Pará state, Brazil. **Bol Latinoam Caribe Plant Med Aromat** 16 (3): 206 – 262.

INTRODUCTION

Since time immemorial, humans have looked to nature for ways to improve their living conditions and increase their chances of survival. One example is the way in which humans have interacted with plants, developing various uses for them (Giraldi & Hanazaki, 2010). The close relationship between humans and plants has promoted the accumulation of botanical knowledge that is transmitted through the sharing of family narratives and community experiences, that has resulted in a valuable genetic heritage, each society maintaining a knowledge base of edible and therapeutic plants (Siviero *et al*., 2012).

Ethnobotany is the study of the relationships between human populations and plants, addressing the ideas conceptualized by a given society regarding plant life. Ethnobotanists attempt to salvage and preserve traditional botanical knowledge related to the various uses of local flora (Posey, 1985).

The use of medicinal plants as a way of maintaining or recuperating a good health status is considered valuable by various communities in Brazil, such as that comprising urban dwellers (Carniello *et al*., 2010). Such plants, which are typically grown in home gardens, are viewed as the first-line treatment for most diseases, because they represent a low-cost alternative to pharmaceutical drugs (Almeida *et al*., 2012).

Home gardens are defined as spaces, adjacent to residences, within which humans engage in cultivation practices that contribute to the selection of species considered useful to the community, as occurs in the communities of the Amazon region (Martins *et al*., 2012). Such gardens create environments for the cultivation, multiplication, and preservation of the germplasm all of which are fundamental to the conservation of genetic resources and of the associated knowledge (Eichemberg *et al*., 2009).

The continuity of practices related to the use of medicinal plants grown in home gardens is threatened by the urbanization and destruction of green spaces. In Brazil, the process of urban expansion has impeded the preservation of such spaces (Trotta *et al*., 2012). In addition, that process can lead to a loss of biodiversity, threatening not only the conservation of the genetic heritage but also that of the local knowledge base (Pereira & Diegues, 2010). The objective of this study was to evaluate, from an ethnobotanical perspective, the medicinal plants occurring in urban home gardens in north Brazil.

MATERIAL AND METHODS

Study area

The study was conducted in the São Sebastião neighborhood of the city of Abaetetuba (01°44'03.4"S; 048°52'30.1"W), on the right (east) bank of the Tocantins river in Pará state, within the Cametá microregion and the mesoregion of northeastern Pará (Figure 1). The city encompasses an area of 1.610,408 km^2 and has a population of 141.100, the main sources of income being commerce, agriculture, livestock production, and the extraction of plant life (IBGE, 2010).

Abaetetuba has an equatorial climate, categorized as super-humid, with a rainy season (January-June) and a dry season (July-December). The mean annual temperature is approximately 27° C, monthly mean temperatures ranging from 20° C to 35°C. The total annual rainfall in the region hovers around 2000 mm, and the mean relative humidity is 85% (SEPOF, 2011). The urban zone of Abaetetuba comprises 14 neighborhoods. The São Sebastião neighborhood is 35 years old and has a great number of home gardens.

Sampling and selection of the home gardens

Fieldwork was carried out between June 2013 and September 2014. The neighborhood to be studied was selected on the basis of the following: time since establishment (preference for longer); geographic origin of the residents (preference for rural); and the number of home gardens (preference for more). The first phase of the study consisted in making informal visits in order to establish rapport with the residents prior to conducting interviews. Data obtained from community leaders in the neighborhood indicated that there were 1.425 home gardens distributed among 34 streets.

We used a probabilistic sampling procedure, in which the minimum sample size was calculated on the basis of the total number of home gardens, with a 6% margin of error, using the following formulas: $N_0 = 1/ E_0^2$; $n = N. N_0 / N + N_0$. Where N_0 is the provisory sample size, E_0 is the margin of error, *n* is the sample size, and N is the total population. We thus calculated the minimum sample to be 233 home

gardens. To select the residents to be visited and subsequently interviewed, we used simple random sampling (Barbetta, 2013).

Data collection

Prior to initiating the fieldwork, we met with members of the community in order to present our research project and to obtain written consent, in the form of a permit signed by local authorities, granting permission for the study to be conducted.

Using questionnaires, we conducted semi-structured interviews (Albuquerque *et al*., 2010) with the owners of the 233 home gardens selected, in order to determine their level of knowledge about the medicinal plants growing therein. The questionnaires included questions about the geographic origin of the owners, what steps they take when they become ill and how often they seek medical treatment. Questions designed to collect ethnobotanical data regarding the medicinal plants were related to the conditions for which their use is indicated, the forms in which they are prepared, and which parts of the plant are used. In addition to the questionnaires, we used field diaries (Bernard, 2006), in which each researcher could record perceptions related to the theme of the investigation.

Identification of species

The plants cited in the interviews were identified in the Herbarium of the Museu Paraense Emílio Goeldi. We collected and preserved botanical specimens, as described by Fidalgo & Bononi (1984). The specimens were incorporated into the collection of the Prof. Dra. Marlene Freitas da Silva Herbarium of Pará State University, in the city of Belém. The scientific names of species were checked against the List of Species in the Plant of List (The Plant List, 2013) and against the database of the Missouri Botanical Garden (Missouri Botanical Garden, 2014).

Data analysis

Using a qualitative approach (Amorozo & Viertler, 2010), we analyzed the relationship that the residents had with the medicinal plants occurring in their home gardens. The diseases cited were grouped in accordance with the International Classification of Diseases, 10th revision (World Health Organization, 2008). In addition to health problems recognized by modern medicine, we considered so-called "Cultural ills" (Amorozo, 2002), including the effects of the "evil eye" and other types of curses or spells.

As can be seen in Table 1, we used a quantitative approach to evaluating the relevance of the medicinal plants in the home gardens visited. To determine the variety and distribution of uses, we calculated Total Species Diversity (SD_{tot}) and Total Species Equitability (SE_{tot}), as described by Byg & Balslev (2001) and adapted by Silva *et al*. (2006). To quantify the relative importance of a given species in relation to its use, we also calculated Use Value (UVs), as described by Phillips & Gentry (1993) and adapted by Rossato *et al*. (1999), and Importance Value (IVs), as also described by Byg & Balslev (2001) and adapted by Silva *et al*. (2006). By calculating the Informant Consensus Factor (ICF), as described by Troter & Logan (1986), we attempted to identify the subcategories of diseases that showed the greatest agreement among the interviewees in terms of the plant species indicated for their treatment.

For the plants identified to the species level, we searched the bibliographic databases Science Direct, PUBMED and LILACS to check whether they had been targets of previous phytochemical and pharmacological studies. Pharmacological studies were used for comparison and possible confirmation of folk indications.

RESULTS AND DISCUSSION

Lifestyles in the community

Of the 233 home garden owners interviewed, 170 (73%) were native to Abaetetuba - 123 and 47 having grown up in the rural and urban zones, respectively - 58 (25%) had been born in other municipalities within the state of Pará, and the remaining 5 (2%) had been born in another state. It is noteworthy that more than half of the interviewees were from rural areas of the region under study, where they had worked in agriculture, and had continued to grow plants in their home gardens after migrating to the urban zone. According to Amaral & Guarim Neto (2008), individuals who acquire the habit of planting and developing dependent relationships with plant resources rarely cease to engage in such activity, even after migrating to urban areas.

When they fall ill, 56% of the interviewees use medicinal plants from their home gardens as the first-line treatment, whereas the remaining 44% first seek medical treatment at a health care facility, although those in the latter group reported using plant-based home remedies as a complement to the

medications prescribed. The combined use of such home remedies and pharmaceutical drugs is common in Brazil, as has been reported by other authors (Silva *et al*., 2008; Oliveira *et al*., 2014a).

Table 1
Indices employed in the analysis of ethnobotanical data related to the uses of medicinal plant species grown in home gardens in the São Sebastião neighborhood of the city of Abaetetuba, in the state of Pará, Brazil. Source: Silva *et al.* (2006).
SD_{tot} – Total Species Diversity; SE_{tot} – Total Species Equitability; IVs – Importance Value; UVs – Use Value; ICF – Informant Consensus Factor.

Index	Description (in this context)	Formula	Range
SD_{tot}	Measures how multiple species are used and how they contribute to the total use	$SDtot = 1 / \sum Ps2$ where *P* is the total contribution of a given species (*s*) to the total use of all of the species included (number of times that species *s* is cited, divided by the total number of uses of all of the species included)	0-n
SE_{tot}	Measures how various species contribute to the total use, independent of the total number of species used	$SEtot = SDtot / n$ where *n* is the number of species used	0-1
IVs	Measures the proportion of informants who cite a given species as important	$IVs = nis / n$ where *nis* is the number of informants who consider a species most important, and *n* is the total number of informants	0-1
UVs	Indicates the value of the use of one species by one informant in relation to the total number of informants	$UVs = (\sum U) / n$ where U is the number of uses cited by an informant, and n is the total number of informants	0-1
ICF	Indicates which body systems (disease categories) have the greatest relative importance, as evidenced by the level of informant agreement regarding the therapeutic uses of the species under study	$ICF = (nur - nt) / (nur - 1)$ where *nur* is the number of use citations in each category, and *nt* is the number of species used in that category	0-1

In the São Sebastião neighborhood, there is a family health care clinic, where 55% of the interviewees reported receiving treatment on a regular basis, although 45% reported seeking treatment only after becoming ill. There are also 12 community health agents (affiliated with the national Family Health Program) working in the neighborhood, The community health agents conduct regular home visits in order to monitor residents who are currently under medical treatment. Despite having access to modern health care services, members of the community still cultivate and use plants as a therapeutic resource. According to Silva (2008), that can be explained by the fact that there is a cultural component to the use of medicinal plants in the treatment of diseases.

Within our sample, we identified six traditional healers - individuals sought out by the local population because they cultivate and have extensive knowledge of medicinal plants, as well as offering prayers in order to cure various ills. Santos *et al*. (2005) described the curative rituals performed by "prayer-reciters", "blessing-givers", and healers in the Rio Negro Valley region of the Brazilian state of Amazonas, emphasizing the important role that these social actors play in the use of local plants as phytotherapy.

Cultivation of medicinal plants

When asked about how and where they cultivate medicinal plants, 77% of the interviewees reported that they always plant them directly in the soil, 5% reported that they always grow them on raised, slatted wooden platforms (in pots, pans, buckets, or woven baskets), and 18% reported that they use a combination of those two approaches. Martins *et al*. (2012) stated that such platforms are used in the cultivation of plant species that require more care in terms of light intensity, protection from animal attacks, intensity of rainfall, and soil composition, whereas those that are more resistant to rain, pests and light are grown in the soil.

Medicinal plants are typically procured to meet the therapeutic needs of the family, and 82.5% of the interviewees reported that the labor involved in caring for those plants is supplied by the female members of the family. Siviero *et al*. (2012) also found that women are the primary caretakers of home gardens in the Amazon region, reporting that the gardens are strategically located in order to facilitate and promote their tending.

Among the São Sebastião residents interviewed, 74% stated that they exchanged medicinal plants with relatives and neighbors. That was previously reported by Pilla *et al*. (2006) for a town in southeastern Brazil, where the authors found that the majority of such plants were grown in home gardens and exchanged among family members. This habit constitutes an important practice for imparting knowledge through interaction, thus favoring the cultivation of medicinal plant species (Winklerprins & Oliveira, 2010).

The practices adopted in the home gardens evaluated include pruning (the cutting of selected limbs and branches), weeding (the removal of creeping plants with a hoe or machete), fertilization (with black soil and açaí seed or dry brush), and thinning (numerical reduction of species that pose risks to the garden as a whole). All of these cultural practices are aimed at the ideal development of the species. According to Silva *et al*. (2014c), the agricultural practices traditionally employed by humans contribute to reducing the use of chemical fertilizers, thus improving the quality of the soil.

Ethnobotanical aspects of home gardens

We identified 124 species of medicinal plants (Table 02), distributed among 107 genera and 55 families, the most well-represented families being Lamiaceae (accounting for 8.9% of the species); Asteraceae (5.6%); and Euphorbiaceae, Fabaceae, and Malvaceae (4.0% each). Lamiaceae and Asteraceae have also been cited as being the most species-rich families in other studies of medicinal plants in home gardens within the Amazon region (Martins *et al.*, 2012; Siviero *et al*., 2012), as well as within the Atlantic Forest Biome (Eichemberg *et al*., 2009; Oliveira *et al*., 2010; Althaus-Ottmann *et al*., 2011) and Cerrado Biome (Liporacci & Simão, 2013). Those two families include various species that contain bioactive compounds (Lorenzi & Souza, 2008), which could explain the high rates of the use of folk medicine.

Table 2
Species of medicinal plants occurring in home gardens in the São Sebastião neighborhood of the city of Abaetetuba, in the state of Pará, Brazil. UVs – Use Value; IVs – Importance Value.

FAMILY *Species*	Common name(s) in Brazilian Portuguese (English)	Condition(s) for which treatment with the species is recommended	Preparation(s)	Plant part(s) used	UVs	IVs	Phytochemical and pharmacological studies
Acanthaceae							
Hemigraphis colorata (Blume) Hallier f.	*Trevo-roxo* (purple waffle plant)	Hemorrhoids, infections of the navel in children, and ear infections	Tea (decoction), extract	Leaves	0.042	0.005	Purple anthocyanin (Skaar *et al*., 2014), phenol, carbohydrates, steroids, saponins, coumarins, tannins, proteins, carboxylic acid, flavonoids, xanthoproteins, alkaloids (Anitha *et al*., 2012), antibacterial effect (Anitha *et al*., 2012)
Justicia pectoralis Jacq.	*Abre caminho, trevo cumaru, trevo, trevinho* (water-willow)	Uterine infection, headache, *aborrecimento de criança*, *quebranto*, heart problems, nervousness	Decoction in a bath, maceration in a bath, tea (decoction)	Leaves	0.033	NCI	Estrogenic and progestagenic effects (Locklear *et al*., 2010)
Justicia secunda Vahl	*Correntinha, vissangue, foissangue, luftal, arnica em planta, esparmo luftal, sulfato ferroso* (St. John bush)	Gastritis, anemia, low resistance to infection, falls, menstrual cramps, diarrhea	Tea (decoction)	Leaves	0.085	0.014	Polyphenol (Koffi *et al*., 2013), secundarellone A, B, and C (Theiler *et al*., 2014)
Ruellia geminiflora Kunth	*Atroveran, buscopan* ([unknown])	Menstrual cramps	Tea (decoction)	Leaves	0.009	0.005	No data found
Adoxaceae							
Sambucus nigra L.	*Sabugueiro* ([European] [black] elder[berry])	Flu, measles, chicken pox, wounds, cough	Tea (decoction), decoction in a bath	Leaves	0.094	0.005	Anthocyanins (Cooney *et al*., 2015), fatty acids (Salvador *et al*., 2015), total phenolic (Fazio *et al*., 2013), sugars, organic acids, polyphenols (Veberic *et al*., 2009), triterpenoids (Salvador *et al*., 2015), antioxidant property (Mikulic-Petkovsek *et al*., 2016), against oxidative stress in human colon cells (Olejnik *et al*., 2016), anti-inflammatory effects (Olejnik *et al*., 2015)
Amaranthaceae							
Alternanthera bettzichiana (Regel) G. Nicholson	*Papagainho* (red calico plant)	Hemorrhage, anemia	Tea (decoction)	Leaves	0.024	NCI	No data found
Alternanthera brasiliana (L.) Kuntze	*Terramicina* (Brazilian joy weed)	Urinary tract infection, menstrual cramps, uterine infection, intestinal infection, wounds,	Tea (infusion), tea (decoction), extract	Leaves	0.052	0.009	Sitosterol-3-*O*-β-D-glucopyranoside, flavones, crysoeriol (5,7,4'-trihydroxy-3'-methoxyflavone), tricin (5,7,4'-trihydroxy-3',5'-

FAMILY *Species*	Common name(s) in Brazilian Portuguese (English)	Condition(s) for which treatment with the species is recommended	Preparation(s)	Plant part(s) used	UVs	IVs	Phytochemical and pharmacological studies
		poor circulation					dimethoxyflavone), 7- *O*-β-D-glucopyranoside-5,4'-dihydroxy-3' methoxyflavone (Facundo *et al*., 2012), antioxidant activity (Enechi *et al*., 2013)
Dysphania ambrosioides (L.) Mosyakin & Clemants	*Mastruz, metruz* (Epazote, wormseed, Jesuit's tea, Mexican tea)	Lung problems, cough, asthma, urinary tract infection, uterine infection, intestinal worms	Juice	Leaves	0.075	0.005	Terpenoids (Paré *et al*., 1993), carvacrol, caryophyllene oxide, ascaridole (Monzote *et al*., 2009), antifungal activity (Kumar *et al*., 2007), leishmanicidal activity (Monzote *et al*., 2014), antiaflatoxigenic activity (Kumar *et al*., 2007), anti-inflammatory and anti-nociceptive effects (Grassi *et al*., 2013), antioxidant activity, anti-tumor activity (Barros *et al*., 2013), acaricidal effect (Kouam *et al*., 2015)
Pfaffia glomerata (Spreng.) Pedersen	*Corrente* (Brazilian ginseng)	Gastritis, diarrhea, constipation	Tea (decoction), decoction in a bath	Leaves	0.019	NCI	Ecdysterone (Zimmer *et al*., 2006), gastroprotective effect (Freitas *et al*., 2004), analgesic and anti-inflammatory activities (Neto *et al*., 2005), trypanocidal and leishmanicidal activities (Neto *et al*., 2004)
Amaryllidaceae							
Eucharis amazonica Linden ex Planch.	*Cebolinha, cebola brava* (Amazon lily, Eucharist lily)	Asthma	Juice	Roots	0.019	NCI	Alkaloids (Cabezas *et al*., 2003)
Anacardiaceae							
Anacardium giganteum Hancock ex Engl.	*Caju do mato* (wild cashew)	Gastritis	Tea (decoction)	Skin/bark	0.005	NCI	Depressive activity (Castro *et al*., 2005)
Anacardium occidentale L.	*Cajueiro* (cashew tree)	Uterine infection, vaginal inflammation, diarrhea, wounds, gastritis	Decoction in a bath, tea (decoction), juice	Skin/bark and fruit	0.193	0.024	Anacardic acids, cardol, cardanol (Yuliana *et al*., 2014), total phenolic (Encarnação *et al*., 2016), monomeric phenols (Michodjehoun-Mestres *et al*., 2009), carotenoids, carotenoid esters, anthocyanins (Schweiggert *et al*., 2016), gastroprotective effect (Morais *et al*., 2010), antidiarroheal activity (Araújo *et al*., 2015), anti-ulcerogenic effect (Konan & Bacchi, 2007), anti-inflammatory property (Olajide *et al*., 2013), antioxidant activity (Encarnação *et al*., 2016), hypoglycemic effect (Dionísio *et al*., 2015), antimicrobial activity (Ajileye *et al*., 2015), antibacterial activity (Tan &

FAMILY ***Species***	**Common name(s) in Brazilian Portuguese (English)**	**Condition(s) for which treatment with the species is recommended**	**Preparation(s)**	**Plant part(s) used**	**UVs**	**IVs**	**Phytochemical and pharmacological studies**
							Chan, 2014)
Mangifera indica L.	*Mangueira* (mango tree)	Diarrhea	Tea (decoction)	Skin/bark	0.005	NCI	Gallotannins (Luo *et al*., 2014), 1,2,3,4,6 Penta-*O*-galloyl-β-D-glucose (Mohan *et al*., 2013), alkaloids, flavonoids, terpenoids (Prado *et al*., 2013), phenolic compounds (Fernández-Ponce *et al*., 2015), triterpenoids (Anjaneyulu *et al*., 1999), antihepatotoxic activity (Fahmy *et al*., 2016), anti-tumor effects (García-Rivera *et al*., 2011), antioxidant property (Fernández-Ponce *et al*., 2015), antidiarrhoeal activity (Yakubu & Salimon, 2015), antimicrobial activity (Singh *et al*., 2015), anti-inflammatory activity (Mohan *et al*., 2013)
Schinus terebinthifolia Raddi	*Aroeira* (Brazilian pepper, rose pepper, Christmasberry)	Uterine infection, intestinal infection, gastritis, stomach cancer	Tea (decoction)	Leaves	0.019	0.005	Flavonoids (Bernardes *et al*., 2014), spirocyclopropane (Richter *et al*., 2010), triterpene acids (Vieira *et al*., 2015), α-pinene, β-caryophyllene, germacrene D, β-pinene (Cavalcanti *et al*., 2015), antimetastatic protection (Matsuo *et al*., 2011), antioxidant and antimycobacterial activities (Uliana *et al*., 2016), neuroprotective effect (Sereniki *et al*., 2016), antimicrobial activity (Bernardes *et al*., 2014), anti-inflammatory effect (Rosas *et al*., 2015), anti-allergic activity (Cavalher-Machado *et al*., 2008)
Annonaceae							
Annona mucosa Jacq.	*Biribá* (biriba)	Sore throat	Tea (decoction)	Leaves and skin/bark	0.019	NCI	Epomusenins A and B (Chen *et al*., 1996), alkaloids, acetogenins (Ribeiro *et al*., 2013), annonaceous acetogenins (Gu *et al*., 1997), rollicosin (Liaw *et al*., 2003) insecticidal activity (Ribeiro *et al*., 2013)
Annona muricata L.	*Graviola* (soursop tree, custard apple tree)	Obesity, diabetes	Tea (decoction)	Leaves	0.019	NCI	Acetogenins (Jaramillo *et al*., 2000), annonacous acetogenins (Sun *et al*., 2014c), isoquinoline alkaloids (Hasrat *et al*., 1997), anticancer activity (Sun *et al*., 2015c), anti-ulcerogenic activity (Bento *et al*., 2016), leishmanicidal activity (Vila-Nova *et al*., 2013), anthelmintic activity (Ferreira *et al*., 2013), antidiabetic and antioxidant

FAMILY *Species*	Common name(s) in Brazilian Portuguese (English)	Condition(s) for which treatment with the species is recommended	Preparation(s)	Plant part(s) used	UVs	IVs	Phytochemical and pharmacological studies
							effects (Florence *et al*., 2014)
Apiaceae							
Eryngium foetidum L.	*Chicória* (culantro, blessed thistle, Amazon chicory)	Intestinal worms, diarrhea, stomachache, *diarreia de dentição*, high blood pressure, toothache	Tea (decoction)	Roots	0.042	NCI	Eryngial (trans-2-dodecenal) (Forbes *et al*., 2014), anti-inflammatory activity (Dawilai *et al*., 2013), anticlastogenic effect (Promkum *et al*., 2012)
Araceae							
Dieffenbachia seguine (Jacq.) Schott	*Comigo ninguém pode, aninga do maranhão* (dumb cane, dumbcane)	*Panemeira, mau olhado, olho gordo, quebranto*	Maceration in a bath, decoction in a bath	Leaves	0.094	0.005	No data found
Philodendron deflexum Poepp. ex Schott	*Jibóia* ([unknown])	Erysipelas	Plaster	Leaves	0.005	NCI	No data found
Araliaceae							
Polyscias scutellaria (Burm.f.) Fosberg	*Cuinha, cuerinha* (shield aralia, plum aralia, Balfour aralia)	*Aborrecimento de criança*, hemorrhage, menstrual cramps	Maceration in a bath, tea (decoction)	Leaves	0.019	0.005	Triterpenic glycosides (Paphassarang *et al*., 1989)
Arecaceae							
Bactris gasipaes Kunth	*Pupunha, pupunheira* (peach palm)	Hemorrhoids, uterine infection	Tea (decoction)	Roots	0.009	NCI	Carotenoid (Basto *et al*., 2016), carbohydrate (Bolanho *et al*., 2015), total phenolic, total flavonoids, total carotenoids (Espinosa-Pardo *et al*., 2014), antioxidant activity (Espinosa-Pardo *et al*., 2014)
Cocos nucifera L.	*Coqueiro* (coconut palm)	Diarrhea	Fresh	Fruit	0.009	0.005	Phenolic compounds, flavonoids, resins, alkaloids (Renjith *et al*., 2013), triterpens, saponnins, tannins (Costa *et al*., 2010), peroxidases (Balasubramanian & Boopathy, 2013), anthelmintic activity (Costa *et al*., 2010), antibacterial activity (Nitbani *et al*., 2016), cytoprotective and antihyperglycemic properties (Renjith *et al*., 2013), antioxidant and antimicrobial properties (Chakraborty & Mitra, 2008), antinociceptive and anti-inflammatory activity (Rinaldi *et al*., 2009), vasorelaxant and antihypertensive activities (Bankar *et al*., 2011), larvicidal activity (Roopan *et al*., 2013), estrogenic effect (Soumya *et al*., 2014)
Euterpe oleracea	*Açaí* (assai	Diarrhea, liver	Tea (decoction),	Roots and	0.038	0.005	Phenolic glucosides, neolignan

FAMILY *Species*	Common name(s) in Brazilian Portuguese (English)	Condition(s) for which treatment with the species is recommended	Preparation(s)	Plant part(s) used	UVs	IVs	Phytochemical and pharmacological studies
Mart.	palm, acai palm, açaí palm)	problems	extract	seeds			(Hu *et al*., 2014), anthocyanin (Rogez *et al*., 2011), flavonoids (Kang *et al*., 2010), fatty acids, phenolic compounds (Batista *et al*., 2016) antioxidant and cytotoxicity activities (Hu *et al*., 2014), anticonvulsant property (Souza-Monteiro *et al*., 2015), antiproliferative activity (Pacheco-Palencia *et al*., 2010), anti-inflammatory activity (Moura *et al*., 2012), allelopathic activity (Batista *et al*., 2016)
Aristolochiaceae							
Aristolochia trilobata L.	*Urubucaá* (Dutchman's pipe)	Gastritis, stomachache, hemorrhage	Tea (decoction)	Leaves	0.014	NCI	No data found
Asparagaceae							
Agave deserti Engelm.	*Espinheira santa* (desert agave)	*Quebranto*	Maceration in a bath	Leaves	0.005	NCI	No data found
Agave neglecta Small	*Coratá* (wild century plant)	*Quebranto*, *panemeira*, *mau olhado*, *espírito mau*, cough	Decoction in a bath, maceration in a bath, syrup	Leaves	0.028	NCI	No data found
Sansevieria trifasciata Prain	*Espada de São Jorge* (snake plant, mother-in-law's tongue, Saint George's sword)	*Quebranto*, *mau olhado*, *panemeira*, *olho gordo*, *espírito mau*	Decoction in a bath, maceration in a bath	Leaves	0.080	NCI	Steroidal saponins (Mimaki *et al*., 1996), pregnane glycosides (Mimaki *et al*., 1997), sappanin-type homoisoflavonoids (Tchegnitegni *et al*., 2015), anti-allergic and anti-anaphylactic activities (Andhare *et al*., 2012)
Asteraceae							
Acmella oleracea (L.) R.K.Jansen	*Jambu* (toothache plant, paracress)	Nervousness, gastritis, tachycardia	Tea (decoction)	Leaves	0.014	NCI	Rhamnogalacturonan (Maria-Ferreira *et al*., 2014), acetylenic 2-phenylethylamides (Simas *et al*., 2013), alkylamides (Cheng *et al*., 2015), gastroprotective effect (Maria-Ferreira *et al*., 2014), antinociceptive effects (Nomura *et al*., 2013), larvicidal activity (Simas *et al*., 2013)
Ayapana triplinervis (Vahl) R.M.King & H.Rob.	*Japana, japana branca* (water hemp)	Cough, *quebranto*, *aborrecimento de criança* rheumatism, *panemeira*, flu, vaginal infection, ovarian inflammation	Maceration in a bath, tea (decoction), syrup	Leaves	0.108	0.005	Thymohydroquinone dimethyl ether (Gauvin-Bialecki & Morodon, 2009)
Bidens pilosa L.	*Picão, alfazema* (hairy beggarticks)	Uterine infection, hepatitis, gastritis, *quebranto*	Tea (decoction), maceration in a bath	Leafy branches	0.042	NCI	Hydoxylcinnamoyl tartaric acids (Khoza *et al*., 2016), sesquiterpene, polyacetylene (Grombone-Guaratini *et al*., 2005), 5-*O*-methylhoslundin

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							(Sarker *et al*., 2000), flavonoids, centaurein, centaureidin (Chang *et al*., 2007), antimicrobial activity (Khan *et al*., 2001), antidiabetic property (Chien *et al*., 2009), immunosuppressive and anti-inflammatory effects (Pereira *et al*., 1999), antimalarial activity (Oliveira *et al*., 2004), antioxidant and immunomodulatory activities (Abajo *et al*., 2004), anti-tumor potential (Kviecinski *et al*., 2011), antiulcer activity (Alvarez *et al*., 1999), intestinal mucositis (Ávila *et al*., 2015), antibacterial and antifungal activities (Deba *et al*., 2008)
Gymnanthemum amygdalinum (Delile) Sch.Bip. ex Walp.	*Boldo de planta* (bitterleaf)	Gastritis, hepatitis, stomachache, diarrhea	Tea (decoction), tea (infusion)	Leaves	0.165	0.047	Antioxidant activity (Silva *et al*., 2013a; Del-Vechio-Vieira *et al*., 2013)
Mikania lindleyana DC.	*Sicuriju, sucuriju* (sucuriju)	Gastritis, stomachache, liver problems, diabetes, asthma	Tea (decoction)	Leaves	0.123	0.052	Anti-inflammatory activity (Vanderlinde *et al*., 2012)
Pluchea sagittalis Less	*Macela* (wingstem camphorweed)	Stomachache, vomiting, high blood pressure, stomachache, liver problems, diarrhea	Tea (decoction)	Leaves	0.009	0.019	Antinociceptive and gastroprotective activities (Figueredo *et al*., 2011)
Tagetes patula L.	*Cravo* (French marigold)	Rheumatism, headache, epilepsy, stroke, stomachache, intestinal worms, arthrosis	Maceration in a bath, tea (decoction), plaster	Leaves	0.075	0.009	Flavonoids (Munhoz *et al*., 2014), thiophenes (Margl *et al*., 2001), benzofuran derivatives (Margl *et al*., 2005), (Z)-β-ocimene, (E)-β-ocimene, terpinolene, (Z)-ocimenone, (E)-ocimenone, δ-elemene (Prakash *et al*., 2012), larvicidal effect (Munhoz *et al*., 2014)
Bignoniaceae							
Fridericia chica (Bonpl.) L.G.Lohmann	*Pariri* ([unknown])	Anemia, kidney problems, urinary tract infection, albumin deficiency during pregnancy	Tea (decoction), syrup	Leaves	0.283	0.071	Flavone (Takemura *et al*., 1995), 3-Desoxyanthocyanidins (Zorn *et al*., 2001), anthocyanins, luteolin (Paula *et al*., 2014), 3-Deoxyanthocyanidins (Devia *et al*., 2002), antimicrobial activity (Mafioleti *et al*., 2013), anti-inflammatory, antiangiogenic and antiproliferative activities (Michel *et al*., 2015), leishmanicidal and cytotoxicity activities (Sá *et al*., 2016), anti-ulcerogenic activity (Servat-Medina *et al*., 2015), antioxidant capacity (Siraichi *et*

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							al., 2013)
Mansoa standleyi (Steyerm.) A. H. Gentry	*Cipó-alho* (garlic vine)	*Quebranto, mau olhado, espírito mau, panemeira, uruca, assombro*	Decoction in a bath	Leaves	0.165	NCI	Diallyl disulfide and diallyl trisulfide (Souza Filho *et al*., 2009a), allelophatic effect (Souza Filho *et al*., 2009a)
Bixaceae							
Bixa orellana L.	*Urucu* (lipstick tree, achiote)	High cholesterol, conjunctivitis, vision problems, wounds, heart problems	Tea (maceration), maceration in a bath	Leaves and seeds	0.042	NCI	Carotenoids (Mercadante *et al*., 1997; Jako *et al*., 2002), terpenoids (Conrad *et al*., 2013), antioxidant activity (Smilin *et al*., 2012)
BromeliaceaE							
Ananas ananassoides (Baker) L. B. Sm.	*Nananzinho* (wild pineapple, cerrado pineapple)	Hemorrhage	Juice	Fruit	0.005	NCI	No data found
Cactaceae							
Cereus jamacaru DC.	*Jamacaru* (queen of the night cactus)	Urinary tract infection, kidney problems, erysipelas, sore throat, chest pain, lung problems, flu, *quebranto*	Tea (decoction), maceration in a bath, plaster, syrup	Stem	0.047	0.005	Anthelmintic effects (Vatta *et al*., 2011)
Epiphyllum phyllanthus (L.) Haw.	*Cacto de palma* (climbing cactus)	Cancer, toothache	Plaster	Stem	0.009	0.005	Saponins and alkaloids (Pereira *et al*., 2008)
Caricaceae							
Carica papaya L.	*Mamão macho* (papaya, pawpaw, papaw)	Intestinal worms, amoebic infection, diarrhea, vomiting, kidney problems,	Tea (decoction)	Roots, leaves and shoots	0.061	0.005	Flavonoids, alkaloids (Julianti *et al*., 2014), glucosides (Galang *et al*., 2016), total phenolic (Gogna *et al*., 2015), phenols, carotenoids, vitamin C (Sancho *et al*., 2011), antiplasmodial activity (Julianti *et al*., 2014), antithrombocytopenic activity (Zunjar *et al*., 2016), hypoglycemic activity (Juárez-Rojop *et al*., 2014)
Convolvulaceae							
Ipomoea asarifolia (Desr.) Roem. & Schult.	*Salsa* (ginger-leaf morning glory)	Wounds	Tea (decoction), extract	Leaves and roots	0.005	NCI	Hepatoprotective activity (Farida *et al*., 2012), potential effect against inflammation (Lima *et al*., 2014), trypanocidal efficacy (Alkali *et al*., 2015)
Costaceae							
Costus spicatus (Jacq.) Sw.	*Canafiche, canafístula* (spiked spiralflag ginger, Indian head ginger)	Painful urination, urinary tract infection, renal inflammation, kidney stone, uterine infection	Tea (decoction)	Leaves	0.274	0.028	Furostanol glycoside (Silva *et al*., 1999), flavonol glycosides (Silva *et al*., 2000), saponins, alkaloids, tannins (Paes *et al*., 2013), antioxidant activity (Azevedo *et al*., 2014)
Crassulaceae							
Kalanchoe pinnata	*Pirarucu* (life	Ear infection,	Tea (decoction)	Leaves	0.462	0.028	Flavonoids (Muzitano *et al*.,

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(Lam.) Pers.	leaf, leaf of life, life plant, good-luck leaf, miracle leaf)	urinary tract infection, endometritis, vaginal infection, gastritis, erysipelas, toothache, stomachache, headache, falls, wounds, sore throat, asthma, vision problems, boil	decoction in a bath, extract, plaster, juice				2011), antileishmanial activity (Muzitano *et al*., 2011), activity anticonvulsant (Mora-Pérez & Hernández-Medel, 2015), hypoglycemic and hypocholesterolemic activities (Menon *et al*., 2015), antihypertensive activity (Bopda *et al*., 2014)
Cyperaceae							
Cyperus articulatus L.	*Priprioca* (jointed flatsedge)	*Quebranto*, deep wound	Maceration in a bath	Roots	0.009	NCI	Corymbolone and mustakone (Rukunga *et al*., 2008), sedative property (Rakotonirina *et al*., 2001), antiplasmodial activity (Rukunga *et al*., 2008), anticonvulsant property (Bum *et al*., 2001)
Euphorbiaceae							
Croton cajucara Benth.	*Sacaca* (white sacaca, red sacaca)	Obesity, rheumatism, generalized aches/pains	Tea (decoction)	Leaves	0.014	NCI	Diterpene lactone (Melo *et al*., 2003), antinociceptive activity (Campos *et al*., 2002), anti-ulcerogenic effect (Paula *et al*., 2008), cytotoxic activity (Almeida *et al*., 2003), gastroprotective effect (Hiruma-Lima *et al*., 2000), antileishmanial activity (Lima *et al*., 2015)
Euphorbia tirucalli L.	*Cruzeiro* (pencil cactus, firestick plant, Indian tree spurge, naked lady, pencil tree, sticks on fire, milk bush)	Warts	Fresh	Sap	0.014	NCI	Euphol (Lin *et al*., 2012), maloyl glucans (Kuster *et al*., 2015) anti-arthritic activity (Bani *et al*., 2007), anti-tumor activity (Valadares *et al*., 2006)
Jatropha curcas L.	*Pião-branco* (Barbados nut, purging nut, physic nut)	Wounds, asthma, flu, sore throat, earache, gastritis, toothache	Fresh, tea (maceration) tea (decoction), lollipop, plaster	Fruit, leaves, skin/bark and sap	0.156	0.014	Diterpenoids (Liu *et al*., 2015), phorbol esters (Baldini *et al*., 2014), anti-toxoplasma activity (Soares *et al*., 2015), antioxidant activity (Fu *et al*., 2014)
Jatropha gossypiifolia L.	*Pião-roxo* (bellyache bush, black physic nut, cotton-leaf physic nut)	*Mau olhado*, *aborrecimento de criança*, "toxin buildup" (need to cleanse the body), *quebranto*, *panemeira*, *espírito mau*, wounds, chest pain, diarrhea	Maceration in a bath, Decoction in a bath, tea (decoction), fresh	Leaves, leafy branches and sap	0.170	0.005	Hypotensive and vasorelaxant effects (Abreu *et al*., 2003), anticoagulant and antioxidant activities (Félix-Silva *et al*., 2014)
Pedilanthus tithymaloides (L.) Poit.	*Coramina* (buckthorn, Christmas	Heart problems, cardiac arrhythmia, nervousness	Tea (decoction)	Leaves	0.160	0.019	Coumarin derivatives (Sandjo *et al*., 2012), antimicrobial effects (Vidotti *et al*., 2006), anti-

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	candle, fiddle flower, Jacob's ladder)						inflammatory and antioxidant activities (Abreu *et al*., 2006),
Fabaceae							
Abrus fruticulosus Wight & Arn.	*Acaçus* ([unknown])	Sore throat, cough, flu	Tea (decoction)	Leaves	0.014	NCI	No data found
Bauhinia forficata Link	*Pata-de-vaca* (cow's-foot)	High cholesterol, high triglycerides, high blood pressure, uterine infection	Tea (decoction)	Leaves	0.019	NCI	Flavonoids (Marques *et al*., 2013), anticoagulant and antifibrinogenolytic properties (Oliveira *et al*., 2005), antidiabetic activity (Pepato *et al*., 2002), hypoglycemic activity (Cunha *et al*., 2010)
Cajanus cajan (L.) Huth	*Feijão-cuandu* (pigeon-pea, Congo-pea)	Headache, flu, constipation	Decoction in a bath, maceration in a bath	Leafy branches	0.047	NCI	Cajanol (Luo *et al*., 2010), cajanuslactone (Kong *et al*., 2010), cajanin (Fu *et al*., 2015), phenolics (Wei *et al*., 2015), anticancer activity (Luo *et al*., 2010), antibacterial activity (Kong *et al*., 2010), antioxidant property (Gao *et al*., 2012)
Erythrina indica Lam.	*Brasileira* (tiger's claw)	Sore throat, "toxin buildup" (need to cleanse the body)	Decoction in a bath, tea (decoction)	Leaves	0.009	NCI	β-galactosidase (Kestwal & Bhide, 2007a), α-mannosidase (Kestwal *et al*., 2007b), hypoglycaemic and antidiabetic activities (Kumar *et al*., 2011), antibacterial and cytotoxic effects (Sre *et al*., 2015), antioxidant activity (Sre *et al*., 2012)
Libidibia ferrea (Mart. ex Tul.) L.P. Queiroz	*Jucá* (leopardtree, leopard tree)	Sore throat, hoarseness, leg pain, toothache, uterine inflammation, wounds, anemia, gastritis	Tea (decoction), tea (maceration), maceration in a bath	Fruit	0.151	0.028	Polyphenols (Araújo *et al*., 2014), anti-inflammatory activity (Dias *et al*., 2013), antinociceptive effect (Sawada *et al*., 2014), antimicrobial activity (Marreiro *et al*., 2014)
Iridaceae							
Eleutherine bulbosa (Mill.) Urb.	*Marupazinho* ("tears of the virgin")	Diarrhea, amoebic infection, *diarreia de dentição*, hemorrhoids, vomiting, stomachache	Tea (decoction)	Roots	0.241	0.038	Eleutherinone (Alves *et al*., 2003)
Lamiaceae							
Aeollanthus suaveolens Mart. ex. Spreng.	*Catinga-de-mulata* ("macassà")	Stroke, convulsions, intestinal worms, stomachache	Tea (decoction)	Leaves	0.028	NCI	No data found
Mentha spicata L.	*Hortelã, hortelazinho* (pennyroyal, squaw mint, mosquito plant, pudding grass)	*Diarreia de dentição*, diarrhea, intestinal worms, flu, headache, stomachache, vomiting, fever	Tea (decoction), syrup	Leaves	0.198	0.090	Terpenoids (Pragadheesh *et al*., 2015), β-carotene and lutein (Gómez-Prieto *et al*., 2007), limonene (Chauhan *et al*., 2009), pulegone (Telci *et al*., 2010), piperitenone oxide (Nakamura *et al*., 2014),

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							flavonoids (Bimakr *et al*., 2011), carvone (Zhao *et al*., 2013), anti-inflammatory activity (Arumugam *et al*., 2008), antifungal, antiaflatoxigenic and insecticidal efficacy (Kedia *et al*., 2014), antioxidant and antibacterial activities (Scherer *et al*., 2013)
Mentha pulegium L.	*Hortelã-pimenta* (pepper mint)	*Diarreia de dentição*, diarrhea	Tea (decoction)	Leaves	0.014	NCI	Piperitenone, β-humulene, germacrene D (Zantar *et al*., 2015), flavonoids (Zaidi *et al*., 1998), pulegone, menthone (Kamkar *et al*., 2010), chrysanthenone (Benlarbi *et al*., 2014), antioxidative effect (Kamkar *et al*., 2010; Jain *et al*., 2012), antimicrobial activity (Mahboubi & Haghi, 2008)
Ocimum campechianum Mill.	*Favaca, favaquinha* (Amazonian basil, wild sweet basil, wild mosquito plant, least basil)	Headache, painful urination, heart problems, cholesterol issues, constipation, high blood pressure, flu	Tea (decoction), decoction in a bath	Leaves	0.057	NCI	Methyl eugenol, germacrene D, eugenol (Pino Benitez *et al*., 2009)
Ocimum gratissimum L.	*Favacão* (African basil, clove basil)	Constipation, flu, *panemeira*, *aborrecimento de criança*, dizziness, headache, sore throat	Tea (decoction), maceration in a bath	Leaves	0.108	NCI	Thymol, γ-terpinene, myrcene (Marie *et al*., 2013), chicoric acid (Casanova *et al*., 2014), hypoglycemic activity (Casanova *et al*., 2014), anesthetic effect (Silva *et al*., 2012), antioxidant and anxiolytic effects (Venuprasad *et al*., 2014), anthelmintic activity (Pessoa *et al*., 2002), relaxant effect (Madeira *et al*., 2002), antitrypanosomal and antiplasmodial activities (Kpoviessi *et al*., 2014), antifungal activity (Nakamura *et al*., 2004), antibacterial property (Orafidiya *et al*., 2006), antileishmanial activity (Ueda-Nakamura *et al*., 2006), anti-arthritic potential (Madhu & Harindran, 2014)
Ocimum minimum L.	*Manjericão* (Greek basil, bush basil)	Stomachache, generalized aches/pains, gastritis, *quebranto*, *mau olhado*, flu, constipation, asthma, lung disease	Tea (decoction), maceration in a bath	Leaves	0.075	0.005	No data found
Plectranthus	*Anador*	Stomachache,	Tea (decoction)	Leaves	0.094	0.009	Trans-caryophyllene (Bandeira

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barbatus Andr.	("forskohlii")	gastritis, headache, generalized aches/pains, diarrhea, stomachache					*et al*., 2011), antioxidant activity (Falé *et al*., 2009; Maioli *et al*., 2010), antioxidant and anti-inflammatory activities (Kapewangolo *et al*., 2013)
Plectranthus neochilus Schltr.	*Sete dores, boldo da índia, anador da índia, boldo verdadeiro* (lobster flower)	Headache, stomachache, stomachache, generalized aches/pains	Tea (decoction), extract	Leaves	0.108	0.014	Trans-caryophyllene (Bandeira *et al*., 2011), antimicrobial activity (Crevelin *et al*., 2015)
Pogostemon heyneanus Benth.	*Oriza* ([Indian] [Java] [false] patchouli)	*Mau olhado, aborrecimento de criança, quebranto*, heart problems, headache, flu, asthma, rheumatism, cramp	Maceration in a bath, tea (decoction)	Leaves	0.104	0.005	α-Bulneseno (Souza Filho *et al*., 2009b)
Tetradenia riparia (Hochst.) Codd	*Mirra* (ginger bush)	Headache, stomachache, *mau olhado, quebranto*	Tea (decoction)	Leaves	0.024	NCI	Acaricidal activity (Gazim *et al*., 2011), antileishmanial activity (Demarchi *et al*., 2015), antidermatophytic activity (Endo *et al*., 2015), antimicrobial activity (Melo *et al*., 2015), analgesic activity (Gazim *et al*., 2010), cytotoxic and antioxidant activities (Gazim *et al*., 2014)
Vitex agnus-castus L.	*Alecrim* (rosemary)	Flu	Decoction in a bath	Leaves	0.005	NCI	Diterpenoids (Hoberg *et al*., 1999), vitexlactam A (Li *et al*., 2002), total phenolic, flavonoids (Sarikurkcu *et al*., 2009), linoleic acid (Liu *et al*., 2004), antifungal activity (Svecová *et al*., 2013), antioxidant activity (Sarikurkcu *et al*., 2009), antiepileptic activity (Saberi *et al*., 2008), antimicrobial activity (Stojkovic *et al*., 2011), cytotoxic activity (Duymus *et al*., 2014), antimutagenic activity (Sarac *et al*., 2015)
Lauraceae							
Cinnamomum verum J. Presl	*Canela* ([Ceylon] [Sri Lanka] [true] cinnamon)	Low blood pressure	Tea (decoction)	Leaves	0.094	NCI	Cinnamaldehyde, cinnamyl acetate, β-phellandrene (Choi *et al*., 2015), 2-methoxycinnamaldehyde (Wong *et al*., 2016; Perng *et al*., 2016), trans-cinnamaldehyde A- and B-type proanthocyanidins (Williams *et al*., 2015), antioxidant activity (Mathew & Abraham, 2006), antibacterial activity (Choi *et al*., 2015), anthelmintic activity (Williams

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							et al., 2015), anticancer effect (Wong *et al*., 2016)
Persea americana Mill.	*Abacateiro* (avocado tree)	Gastritis, liver problems, diarrhea, kidney stone, rheumatism	Tea (decoction), maceration in a bath	Leaves and seeds	0.118	0.005	Heptadecanols (Lee *et al*., 2012), analgesic and anti-inflammatory effects (Adeyemi *et al*., 2002), vasorelaxant action (Owolabi *et al*., 2005), larvicidal activity (Torres *et al*., 2014), antimycobacterial activity (Lu *et al*., 2012), antidiabetic activity (Lima *et al*., 2012a)
Malpighiaceae							
Callaeum antifebrile (Ruiz ex Griseb.) D.M.Johnson	*Cabi* ("ayahuasca negro" [from Spanish])	*Quebranto*, *mau olhado*, *panemeira*, *uruca*, *olho gordo*, stroke	Maceration in a bath, decoction in a bath	Leaves	0.057	0.009	No data found
Malpighia punicifolia L.	*Acerola* (Barbados cherry)	Anemia	Juice	Fruit	0.005	NCI	Antioxidant compounds (Mezadri *et al*., 2008), carotenoid (Rosso & Mercadante, 2005), antioxidant activity (Mezadri *et al*., 2008), antimicrobial Effect (Tremonte *et al*., 2016)
Malvaceae							
Gossypium barbadense L.	*Algodão* (Creole cotton)	Lung cancer, cough, flu, bronchitis, asthma, uterine inflammation, gastritis, stroke	Tea (decoction), juice, syrup, fresh	Leaves	0.123	0.014	Antibacterial activity (Cassano *et al*., 2009)
Hibiscus sabdariffa L.	*Vinagreira-roxa* (roselle, carcade)	Toothache, mycosis, erysipelas, diabetes, *quebranto*, *mau olhado*, constipation, flu	Tea (decoction), decoction in a bath, maceration in a bath	Leaves	0.052	NCI	Anthocyanins (Alarcon-Aguilar *et al*., 2007), total phenolic (Mohd-Esa *et al*., 2010), caffeic, gallic, chlorogenic acids (Mercado-Mercado *et al*., 2015), ascorbic acid (Kalla *et al*.,2015), 1-octen-3-ol, decanal, octanal, 1-hexanol, nonanal (Ramírez-Rodrigues *et al*., 2012), phenolic compounds, caffeoylquinic acids, flavonols (Borrás-Linares *et al*., 2015), anti-obesity (Alarcon-Aguilar *et al*., 2007), antimicrobial activity (Borrás-Linares e*t al*., 2015), antioxidant activity (Ramírez-Rodrigues *et al*., 2012)
Hibiscus rosa-sinensis L.	*Papoula* (Chinese hibiscus, China rose, Hawaiian hibiscus, shoe flower)	Heart problems	Tea (decoction)	Flowers	0.005	NCI	Total phenolics, tannins, flavonoids, favonols, anthocyanins (Mak *et al*., 2013), polyphenols (Silva *et al*., 2014a), antidiabetic potential (Pillai & Mini, 2016), antioxidant and antibacterial activities (Silva *et al*., 2014a)
Theobroma cacao	*Cacau* (cacao	Erysipelas	Fresh	Fruit	0.005	NCI	Polyphenols (González *et al*.,

FAMILY *Species*	Common name(s) in Brazilian Portuguese (English)	Condition(s) for which treatment with the species is recommended	Preparation(s)	Plant part(s) used	UVs	IVs	Phytochemical and pharmacological studies
L.	tree, cocoa tree)						2013), phenolic compounds, procyanidins (Cádiz-Gerrea *et al*., 2014), flavanols (Ioannone *et al*., 2015), antioxidant activity (Ioannone *et al*., 2015)
Urena lobata L.	*Méssica* (caesar weed, caesarweed, bur mallow, pink burr)	Headache, stomachache, gastritis	Tea (decoction)	Seeds	0.009	NCI	Triglycerides (Morelli *et al.*, 2006), (-)-trachelogenin, clematoside-S (Gao *et al*., 2015), mangiferin, stigmasterol, β-sitosterol (Purnomo *et al*., 2015), antimicrobial activity (Gao *et al*., 2015), antidiabetic potential (Purnomo *et al*., 2015)
Marantaceae							
Ischnosiphon gracilis (Rudge) Körn.	*Unha de gato* ("warimbo")	Vaginal infection	Extract	Roots	0.005	NCI	No data found
Melastomataceae							
Tibouchina clavata (Pers.) Wurdack	*Cibalena* (bear's ear)	Headache	Tea (decoction)	Leaves	0.005	NCI	No data found
Meliaceae							
Cedrela odorata L.	*Cedro* ([Spanish] [Barbados] [Brazilian] [British Guiana] [British Honduras] cedar)	Headache, *aborrecimento de criança*	Maceration in a bath	Leaves	0.009	NCI	Phenolic compounds (Almonte-Flores *et al*., 2015), polyphenols, gallic acid, (-)-gallocatechin, (+)-catechin (Giordani *et al*., 2015), antioxidant activity (Almonte-Flores *et al*., 2015; Giordani *et al.*, 2015)
Moraceae							
Dorstenia asaroides Gardner.	*Apii* ([unknown])	Asthma	Tea (decoction)	Roots	0.005	NCI	No data found
Ficus maxima Mill.	*Caxinguba* (fig tree)	Amoebic infection, intestinal worms	Tea (decoction), fresh	Skin/bark and sap	0.009	NCI	No data found
Musaceae							
Musa x paradisiaca L.	*Banana roxa, banana são tomé* ([French] plantain)	Diarrhea, gastritis, intestinal worms	Tea (decoction)	Roots and fruit	0.024	NCI	Anthocyanins (Pazmiño-Durán *et al*., 2001), flavanoid (Nisha & Mini, 2013), polysaccharides (Mondal *et al*., 2001), rutin (Kappel *et al*., 2013), phenylpropanoid glycoside (Krishnan *et al*., 2014), anthelmintic activity (Hussain *et al*., 2011), antidiabetic potential (Krishnan *et al*., 2014), antioxidant, hypoglycaemic and anti-inflammatory activities (Nisha & Mini, 2013), potent antihyperglycemic and moderate antimicrobial activity (Jawla *et al*., 2012)
Myrtaceae							
Psidium	*Goiaba araçá*	Diarrhea	Tea (decoction)	Young	0.005	NCI	Disaccharide, monosaccharides,

FAMILY *Species*	Common name(s) in Brazilian Portuguese (English)	Condition(s) for which treatment with the species is recommended	Preparation(s)	Plant part(s) used	UVs	IVs	Phytochemical and pharmacological studies
acutangulum Mart. ex DC.	(Para guava)			leafy branches			organic acids, trihydroxycinnamic acid glucopyranosyl, tannine digalloylglucopyranosyl, triterpenoid acids, fatty acids (Ramos *et al*., 2015), antioxidant activity (Ramos *et al*., 2015), anti-inflammatory activity (Houël *et al*., 2015)
Psidium guajava L.	*Goiabeira, goiaba* ([yellow] [lemon] [common] guava)	Hemorrhoids, diarrhea, wounds, urinary tract infection, gastritis	Tea (decoction)	Young leafy branches, skin/bark and flowers	0.231	0.042	Flavonoids and phenolic acids (Fernandes *et al*., 2014; Morais-Braga *et al*., 2015), triterpenoids (Shu *et al*., 2012), antidiabetic activity (Soman *et al*., 2013), antidiarrhoeal activity (Mazumdar *et al*., 2015), antifungal potential (Morais-Braga *et al*., 2015), antimicrobial and antioxidant activities (Fernandes *et al*., 2014), anti-inflammatory effect (Jang *et al*., 2014)
Oxalidaceae							
Averrhoa carambola L.	*Caramba, carambola* (star fruit, starfruit)	Diabetes, flu, cholesterol issues	Fresh, juice, tea (decoction)	Fruit and flowers	0.033	NCI	2-Dodecyl-6-methoxycyclohexa-2,5-diene-1,4-Dione (Zheng *et al*., 2013), phenolics, total flavonoids (Wei *et al*., 2014), apigenin-6-C-β-fucopyranoside (Cazarolli *et al*., 2012), antioxidant activity (Thomas *et al*., 2016), Khanam *et al*., 2015), antihyperglycemic activity (Cazarolli *et al*., 2012), antidiabetic activity (Zheng *et al*., 2013)
Oxalis triangularis A.St.-Hil.	*Panama, panama branca* (false shamrock)	Sore throat	Tea (decoction)	Leaves	0.019	NCI	Anthocyanin-flavone (Fossen *et al*., 2007), anthocyanins (Fossen *et al*., 2005)
Passifloraceae							
Passiflora edulis Sims	*Maracujá* (passion flower, passion fruit, passionfruit, purple granadilla)	Heart problems, nervousness	Tea (decoction)	Flowers	0.014	NCI	C-dideoxyhexosyl flavones (Xu *et al*., 2013), vitamin C (Flores *et al*., 2011), total phenolic, flavonoids (López-Vargas *et al*., 2013), triterpenoids, saponins (Wang *et al*., 2013), tocopherols, carotenoids, β-criptoxanthin (Pertuzatti *et al*., 2015), O-flavonoids, C-flavonoids, cyanogenic glycosides, fatty acids (Otify *et al*., 2015), cyanidin-3-O-β-D glucopyranoside, aliphatic esters (Jiménez *et al*., 2011), total flavonoids (Zeraik & Yariwake, 2010), antioxidant and

FAMILY *Species*	Common name(s) in Brazilian Portuguese (English)	Condition(s) for which treatment with the species is recommended	Preparation(s)	Plant part(s) used	UVs	IVs	Phytochemical and pharmacological studies
							antibacterial capacities (López-Vargas *et al*., 2013), antidepressant effect (Wang *et al*., 2013), antidiabetic potential (Kandandapani *et al*., 2015)
Passiflora vespertilio L.	*Maracujá-do-mato* (black passion flower)	Stress, nervousness, wounds	Juice, decoction in a bath	Fruit	0.019	NCI	No data found
Phyllanthaceae							
Phyllanthus niruri L.	*Quebra-pedra* (niruri)	Kidney stone, urinary tract infection, painful urination	Tea (decoction)	Leaves	0.118	0.009	Tannins (Markom *et al*., 2007), antiplasmodial efficacy (Ifeoma *et al*., 2013), anti-inflammatory and antinociceptive activities (Porto *et al*., 2013), antiallodynic effects (Couto *et al*., 2013), antioxidant effect (Colpo *et al*., 2014)
Phytolaccaceae							
Petiveria alliacea L.	*Mucuracaá* (guinea hen weed)	*Mau olhado, assombro, quebranto, panemeira, olho gordo, mau fluído, aborrecimento de criança*, stroke, headache, intestinal worms	Decoction in a bath maceration in a bath, tea (decoction)	Leaves	0.288	0.014	Anticonvulsant potential (Gomes *et al*., 2008), anxiolytic and antidepressant effects (Andrade *et a*l., 2012), antimicrobial activity (Pacheco *et al*., 2013), antiproliferative and anti-tumor activities (Hernández *et al*., 2014), mnemonic effects (Silva *et al*., 2015)
Piperaceae							
Peperomia pellucida (L.) Kunth	*Comida-de-jabuti* (pepper elder, shining bush plant)	Painful urination, kidney stone, diarrhea, gastritis, diabetes, sore throat	Tea (decoction)	Leaves	0.047	NCI	Phytol, 2-Naphthalenol, decahydro, hexadecanoic acid, methyl ester (Wei *et al*., 2011), saponins, phenols, tannins, flavonoids, steroids, triterpenoids (Silva *et al*., 2013b) analgesic activity (Aziba *et al*., 2001), antibacterial activity (Khan & Omoloso, 2002), antiedematogenic and anti-inflammatory activities (Arrigoni-Blank *et al*., 2002), analgesic activity (Arrigoni-Blank *et al*., 2004), anticancer activity (Wei *et al*., 2011), antidiabetic and antioxidant properties (Hamzah *et al*., 2012)
Piper callosum Ruiz & Pav.	*Óleo-elétrico, elixir paregórico* ([unknown])	Stroke, facial paralysis, *mau olhado*, stomachache, gastritis, fever	Tea (decoction) maceration in a bath, plaster	Leaves	0.061	0.005	No data found
Piper arboreum Aubl.	*Pau-de-angola* (long pepper)	*Aborrecimento de criança, uruca, quebranto, mau olhado, panemeira*,	Maceration in a bath, Juice	Leaves	0.061	NCI	Curcumene, *Cis*-cadin-4-en-7-ol, germacrene B (Nascimento *et al*., 2015), 3- geranil-4-hidroxibenzoato de metila

FAMILY *Species*	Common name(s) in Brazilian Portuguese (English)	Condition(s) for which treatment with the species is recommended	Preparation(s)	Plant part(s) used	UVs	IVs	Phytochemical and pharmacological studies
		headache, gastritis					(Ramos & Kato, 2009), antifungal activity (Nascimento *et al*., 2015)
Piper peltatum L.	*Malvarisco* (monkey's hand)	Erysipelas	Plaster	Leaves	0.042	0.005	Nerolidylcatechol (Núñez *et al*., 2005), 4- Nerolidylcatechol (Silva *et al*., 2011), antioxidant capacity (Puertas-Mejía *et al*., 2009), antiplasmodial activity (Silva *et al*., 2011)
Plantaginaceae							
Plantago major L.	*Tançagem* (common plantain)	Sore throat	Tea (decoction)	Leaves	0.014	NCI	Polysaccharides, lipids, caffeic acid derivatives, flavonoids, iridoid glycosides, terpenoids (Samuelsen, 2000), oleanolic acid (Kartini *et al*., 2014), β-glucosidase (Pankoke *et al*., 2013), anti-inflammatory, analgesic, antioxidant, immunomodulating and antiulcer activities (Samuelsen, 2000)
Scoparia dulcis L.	*Vassourinha* (sweet broom, goatweed)	Kidney problems, difficulty urinating, herpes, mycosis	Tea (decoction), maceration in a bath	Leaves and roots		NCI	Benzoxazinoid glycoside, flavonoids (Wu *et al*., 2012), dulcinodal, dulcinodiol, scoadiol decatone (Ahsan *et al*., 2015), antiproliferative activity (Wu *et al*., 2012), antiulcer activity (Babincová *et al*., 2008), antioxidant activity (Ratnasooriya *et al*., 2005)
Poaceae							
Chrysopogon zizanioides (L.) Roberty	*Paticholim* (vetiver, cuscus grass)	Headache	Decoction in a bath	Roots	0.005	NCI	Khusimol, *E*-isovalencenol, α-vetivone (Lima *et al*., 2012b), terpene (Hartwig *et al*., 2015), anti-inflammatory and antinociceptive effects (Lima *et al*., 2012b), acaricidal agents (Campos *et al*., 2015)
Coix lacryma-jobi L.	*Lágrima de nossa senhora* (Job's tears, coixseed, tear grass)	Kidney stone, urinary tract infection, painful urination	Tea (decoction)	Leaves	0.024	0.005	Phenolic acids (Chung *et al*., 2011), flavonoids (Chen *et al*., 2011), flavones, luteolin (Chen *et al*., 2012), anticancer activity, gatroprotective effect (Chung *et al*., 2011), anti-allergic effect (Chen *et al*., 2012), anti-inflammatory effects (Chen *et al*., 2011), antioxidant activity (Wang *et al*., 2016b)
Cymbopogon citratus (DC.) Stapf	*Capim marinho, capim limão* (lemon grass, lemongrass, oil grass)	Gas, queasiness, stomachache, vomiting, flu, constipation, nervousness, hair loss, high blood pressure	Tea (decoction), decoction in a bath, maceration in a bath	Leaves	0.231	0.024	Polysaccharides (Thangam *et al*., 2014), myrcene (Lermen *et al*., 2015), polyphenols (Francisco *et al*., 2013), 2,2-difenil-1-picrilhidrazil, tannins, phenolics acids, flavones glycosides (Figueirinha *et al*., 2008), phenolic compounds

FAMILY *Species*	Common name(s) in Brazilian Portuguese (English)	Condition(s) for which treatment with the species is recommended	Preparation(s)	Plant part(s) used	UVs	IVs	Phytochemical and pharmacological studies
							(Roriz *et al*., 2015; Costa *et al*., 2016b), lutelin 7-*O*-neohesperidoside, cassiaoccidentalin B, carlinoside, cynaroside, tannins (Costa *et al*., 2016a), antinociceptive activity (Viana *et al*., 2000), anticancer therapy (Thangam *et al*., 2014), antioxidant capacity (Roriz *et al*., 2015) anti-inflammatory property (Francisco *et al*., 2013), antibacterial activity (Lucena *et al*., 2015), gastroprotective activity (Sagradas *et al*., 2015)
Saccharum officinarum L.	*Cana-de-açúcar* (sugar cane, sugarcane)	Hair loss	Decoction in a bath, maceration in a bath	Leaves	0.005	NCI	Phenolic acids, flavonoids, glycosides (Abbas *et al*., 2014), phenolic compounds (Sun *et al*., 2014b; Feng *et al*. 2014), triterpenoids, phytosterols (Feng *et al*. 2014), antioxidant activity (Abbas *et al*., 2014)
Polygalaceae							
Caamembeca spectabilis (DC.) J.F.B. Pastore	*Camembeca* ([unknown])	Hyperactivity	Maceration in a bath	Leaves	0.005	NCI	No data found
Portulacaceae							
Portulaca pilosa L.	*Amor-crescido* (kiss me quick, pink purslane)	Wounds, falls, vision problems, erysipelas, stomachache, spinal problems, liver problems, gastritis, cancer, hair loss, uterine infection	Decoction in a bath, tea (decoction), plaster, extract	Leafy branches	0.175	0.019	Trans-clerodane diterpenoids, pilosanol A, B, C (Ohsaki *et al*., 1991), diterpenoid (Ohsaki *et al*., 1995)
Rubiaceae							
Coffea arabica L.	*Café* (arabica coffee, mountain coffee)	Headache, gastritis	Maceration in a bath, tea (decoction)	Leaves and flowers	0.009	NCI	3-*O*-caffeoylquinic acid, 4-*O*-caffeoylquinic acid, 5-*O*-caffeoylquinic acid (Xu *et al*., 2015), ascorbic acid, total flavonoids (Kadri *et al*., 2016), cafestol, 16-*O*-methylcafestol (Guercia *et al*., 2016), chlorogenic acid (Babova *et al*., 2016), antioxidant activity (Babova *et al*., 2016)
Morinda citrifolia L.	*Noni* (great morinda, Indian mulberry, beach mulberry, cheese fruit)	Obesity, diabetes uterine cancer, stomach cancer, high cholesterol, high blood pressure, weakness, urinary tract infection	Tea (decoction) tea (maceration), juice	Leaves and fruit	0.255	0.038	Fatty acid glucosides (Kim *et al*., 2010), octanoic acid, hexanoic acid (Pino *et al*., 2010), total phenolic (Ruhomally *et al*., 2015; Krishnaiah *et al*., 2015), anthraquinones (Wang *et al*., 2016a), phenolic compounds, iridoids, ascorbic acid

FAMILY *Species*	Common name(s) in Brazilian Portuguese (English)	Condition(s) for which treatment with the species is recommended	Preparation(s)	Plant part(s) used	UVs	IVs	Phytochemical and pharmacological studies
							(Dussossoy *et al*., 2011), cytotoxic effect (Lv *et al*., 2011), anti-inflammatory property (Dussossoy *et al*., 2011), antioxidant activity (Ruhomally *et al*., 2015; Palioto *et al*., 2015), anticancer effect (Lim *et al*., 2016), immunomodulatory effect (Palu *et al*., 2008), anti-obesity activity (Jambocus *et al*., 2016), antiplatelet effect (Beltrán *et al*., 2015), antinociceptive activity (Campos *et al*., 2016), antiangiogenic activity (Piaru *et al*., 2012), antiviral activity (Wang *et al*., 2016a), antimicrobial activity (Tintino *et al*., 2015)
Rutaceae							
Citrus x *aurantium* L.	*Laranja da terra* ([bitter] [Seville] [sour] [bigarade] [marmalade] orange)	Albumin deficiency during pregnancy, high cholesterol, heart problems	Tea (decoction), juice, fresh	Fruit and leaves	0.024	0.005	β-mycerne (Bonamin *et al*., 2014), flavonoids (Park *et al*., 2014), hesperidin, neohesperidin (Hamdan *et al*., 2014), antiulcer activity (Bonamin *et al*., 2014), insecticides activity (Zarrad *et al*., 2015), anxiolytic effect (Pultrini *et al*., 2006), anti-inflammatory effect (Kang *et al*., 2011), anticancer effect (Park *et al*., 2014)
Citrus x limon (L.) Osbeck	*Limãozinho, limão* (mandarin lime)	Flu, colds, headache, cough, sore throat, wounds, kidney stone, venous obstruction, queasiness	Tea (decoction), juice, lollipop, fresh, decoction in a bath	Leaves and fruit	0.226	0.014	Total phenolic (Mushtaq *et al*., 2015), antimicrobial effect (Oliveira *et al*., 2014b), antioxidant and antimutagenic activities (Mushtaq *et al*., 2015)
Citrus sinensis (L.) Osbeck	*Laranjeira, laranja* ([sweet] orange)	Flu, colds, heart palpitations, nervousness, fatigue, stomachache	Tea (decoction) decoction in a bath, juice	Leaves and fruit	0.052	NCI	Vitamin C and phenolic compounds (Letaief *et al*., 2016), limonene (Gaínza *et al*., 2015), flavanoneglycosides, polymethoxylated flavones (Chen *et al*., 2015), linoleic acid, α-linoleic acid, oleic acid, estearic acid (Nunes *et al*., 2015), polyphenols (Nayak *et al*., 2015), flavonoids (Barreca *et al*., 2016), anthelmintic activity (Gaínza *et al*., 2015), antioxidant capacity (Barreca *et al*., 2016)
Ruta graveolens L.	*Arruda* ([common] rue; herb-of-grace)	*Aborrecimento de criança, quebranto, mau olhado*, stomachache, stroke, headache, flu, vision	Maceration in a bath, tea (decoction), plaster, fresh, tea (infusion)	Leafy branches	0.165	0.009	2-nonanone and 2-undecanone (Orlanda & Nascimento, 2015), coumarin compounds (Harat *et al*., 2015), rutina and furanocoumarins (Ueng *et al*., 2015), anti-inflammatory and

FAMILY *Species*	Common name(s) in Brazilian Portuguese (English)	Condition(s) for which treatment with the species is recommended	Preparation(s)	Plant part(s) used	UVs	IVs	Phytochemical and pharmacological studies
		problems, facial paralysis, heart problems					antioxidant effects (Raghav *et al*., 2007), hypoglycemic effects (Figueroa-Valverde *et al*., 2009), antimicrobial and anti-inflammatory properties (Harat *et al*., 2015), relaxant activity (Águila *et al*., 2015)
Simaroubaceae							
Quassia amara L.	*Quina* (bitter ash, bitter wood)	Boils	Extract	Leaves	0.005	NCI	Quassinoids (Houël *et al*., 2009), simalikalactone D (Bertani *et al*., 2012), antimalarial property (Bertani *et al*., 2012), anti-ulcerogenic effect (García-Barrantes & Badilla, 2011)
Solanaceae							
Brugmansia suaveolens (Humb. & Bonpl. ex Willd.) Bercht. & C. Presl	*Zabumba* ([white] angel's trumpet)	Asthma	Inhalable mist	Flowers	0.005	NCI	Flavonol glycosides (Geller *et al*., 2014)
Capsicum frutescens L.	*Pimenta malagueta* (cayenne pepper)	*Mau olhado*	Maceration in a bath	Leaves	0.014	NCI	Capsaicin, dihydrocapsaicin, *N*-vanillyl-*n*-acylamide group (Schweiggert *et al*., 2006), capsaicinoid, phenolics compounds (Santos *et al*., 2015), total phenolic, total flavonoids (Gurnani *et* al., 2015), antioxidant effect (Oboh & Ogunruku, 2010), antibacterial activity (Carvalho *et al*., 2010), antimicrobial activity (Gurnani *et* al., 2015)
Solanum melongena L.	*Berinjela* (eggplant)	High cholesterol	Tea (maceration)	Fruit	0.005	NCI	Total phenolics and flavonoids (Kaur *et al*., 2014), ligananamids (Sun *et al*., 2014a), anthocyanins, total monomeric anthocyanin (Dranca & Oroian, 2015), phenylpropanoid amides (Sun *et al*., 2015a), γ-alkylated-γ-butyrolactone (Sun *et al*., 2015b), antioxidant activity (Braga *et al*., 2016) anti-inflammatory effect (Sun *et al*., 2014a; Sun *et al*., 2015b)
Solanum stramoniifolium Jacq.	*Jurubeba* ([unknown])	Intestinal worms	Fresh	Fruit	0.009	NCI	No data found
Talinaceae							
Talinum triangulare (Jacq.) Willd.	*Caruru* (waterleaf, Surinam purslane, Florida spinach, potherb	Stomachache	Tea (decoction)	Leaves	0.005	NCI	Betaxanthin and betacyanin (Swarna *et al*., 2013), phenolics compounds (Brasileiro *et al*., 2015), antioxidant activity (Swarna *et al*., 2013; Brasileiro *et al*., 2015)

FAMILY *Species*	Common name(s) in Brazilian Portuguese (English)	Condition(s) for which treatment with the species is recommended	Preparation(s)	Plant part(s) used	UVs	IVs	Phytochemical and pharmacological studies
	fameflower, sweetheart)						
Turneraceae							
Turnera ulmifolia L.	*Chanana* (yellow alder)	Kidney stone, urinary tract infection	Tea (decoction)	Leaves	0.009	NCI	Flavanoids and phenolics compounds (Brito *et al*., 2012), anti-ulcerogenic and anti-inflammatory effects (Antônio & Brito, 1998), anti-inflammatory and antioxidant activities (Galvez *et al*., 2006; Nascimento *et al*., 2006), antiparasitic activity (Santos *et al*., 2012)
Verbenaceae							
Lippia alba (Mill.) N.E.Br. ex Britton & P.Wilson	*Erva-cidreira* (bushy matgrass)	Stomachache, constipation, heart problems, stomachache, vomiting, high blood pressure, nervousness, insomnia, intestinal worms	Tea (decoction)	Leaves	0.425	0.104	β-guaiene, piperitenone (Alea *et al*., 1996), linalool, 1,8-cineole, β-caryophylene (Siani *et al*., 2002), geranial, geraniol, germacrene D, 1,8-cienole, β-elemene (Tavares *et al*., 2005), citral (neral + geranial), geraniol, β-bourbonene (Jezler *et al*., 2013), carvone, limonene (Ehlert *et al*., 2013), neral (Juiz *et al*., 2015), antibacterial activity (Alea *et al*., 1996) reduction of migraine (Carmona *et al*., 2013), antimicrobial activity (Juiz *et al*., 2015)
Lippia thymoides Mart. & Schauer	*Manjirona* ([unknown])	Gastritis, stomachache, diarrhea, generalized aches/pains	Tea (decoction)	Leaves	0.038	NCI	No data found
Stachytarpheta cayennensis (Rich.) Vahl	*Fel de gozo, ferdeguzo* ([dark-][blue] [Cayenne] snakeweed; bluetop; nettle-leaf [Cayenne] porterweed; Cayenne vervain; rattail; rough-leaf false vervain; blue rat's tail; Brazilian tea; false verbena; nettleleaf velvetberry)	Stomachache, diarrhea, vomiting, cough	Tea (decoction)	Leaves	0.014	NCI	Antimicrobial activity (Souza *et al*., 2010), antioxidant activity (Souza *et al*., 2011)
Violaceae							
Pombalia calceolaria (L.)	*Pecaconha* ([unknown])	Flu, cough	Syrup	Leaves	0.009	NCI	No data found

FAMILY *Species*	Common name(s) in Brazilian Portuguese (English)	Condition(s) for which treatment with the species is recommended	Preparation(s)	Plant part(s) used	UVs	IVs	Phytochemical and pharmacological studies
Paula-Souza							
Vitaceae							
Cissus verticillata (L.) Nicolson & C.E.Jarvis	*Cipó-pucá* (princess vine, millionaire vine, curtain ivy)	Stroke	Tea (decoction), plaster	Leaves	0.028	NCI	Compounds phenolic, terpenoids, polysaccharides (Oliveira *et al*., 2012)
Xanthorrhoeaceae							
Aloe vera (L.) Burm. f.	*Babosa* (aloe vera, aloe, burn plant, lily of the desert, elephant's gall)	Hair loss, erysipelas, stomach cancer, uterine cervical cancer, cough, gastritis, liver problems, wounds, burns, heart problems, urinary tract infection	Tea (decoction), juice, fresh, plaster, syrup, decoction in a bath	Leaves	0.363	0.052	Polysaccharides (Tabandeh *et al*., 2014), lophenol and cycloartanol (Nomaguchi *et al*., 2011), triglucosylated naphthalene glycoside (Yang *et al*., 2010), treatment of gastroesophageal reflux (Panahi *et al*., 2015), anticancer activity (Shalabi *et al*., 2015), antioxidant activity (Kang *et al*., 2014), antidiabetic activity (Nomaguchi *et al*., 2011), antifungal and anti-inflammatory properties (Das *et al*., 2011)
Zingiberaceae							
Alpinia purpurata (Vieill.) K. Schum	*Vindicá* (shellflower, dwarf cardamom)	Heart problems, *mau olhado*, *quebranto*, hyperactivity, albumin deficiency during pregnancy, anemia in pregnancy	Tea (decoction), decoction in a bath	Flowers and leaves	0.071	NCI	Flavanoids (Victório *et al*., 2009a), polyphenols (Silva *et al*., 2014b), antibacterial and anticancer activities (Raj *et al*., 2012), vasodilator activity (Victório *et al*., 2009b), hypotensive effect (Silva *et al*., 2014b)
Hedychium coronarium J. Koenig	*Borboleta* (white ginger, butterfly ginger)	Albumin deficiency during pregnancy, bloating during pregnancy, anemia	Tea (decoction), decoction in a bath	Roots and leaves	0.085	0.005	Saponins, caryophyllene and myrcene (Martins *et al*., 2010)
Zingiber officinale Roscoe	*Gengibre* (ginger)	Sore throat, colds, falls, rheumatism, spinal problems, low blood pressure, fatigue, abdominal cramping	Maceration in a bath, tea (decoction), syrup, lollipop	Roots	0.292	0.028	Gerinal, neral, geraniol (Dabague *et al*., 2011), zingiberene, gerinal, β-phellandrene, β-sesquiphellandrene, β-bisabolene, α-curmene (An *et al*., 2016), antioxidant and antimicrobial activities (Bellik, 2014)

About the main therapeutic use of medicinal plants indicated, which were grouped in accordance with the International Classification of Diseases following: Infectious and Parasitic Diseases (17.6% of the plant species identified); "Cultural ills" (14.5%); Gastrointestinal Disorders (11%); Circulatory Disorders (10.3%); and Respiratory Disorders (10.0%). Similar findings have been reported in other studies conducted within the Amazon region (Carneiro *et al*., 2010; Santos & Lima, 2008) and Atlantic Forest (Vendruscolo & Mentz 2006; Albertasse *et al*., 2010). Data from the National Basic Health Care Database of the Brazilian National Ministry of Health show that 46.55% of households in Abaetetuba have open sewers and only 1.7% are connected to the municipal sewer system

(DATASUS, 2013). Therefore, the fact that medicinal plants are most often used in the treatment of Infectious and Parasitic Diseases could be attributable to the lack of basic sanitation in the city.

The "Cultural ills" cited by the interviewees included *quebranto* (general malaise and physical weakness attributed to a curse), *mau olhado* ("evil eye"), *panemeira* (unhappiness attributed to a curse), *olho gordo* (supposed effect of the envy or jealousy of others), *espírito mau* (evil spirits), *assombro* (haunting), *uruca* (constant bad luck attributed to a curse), *diarreia de dentição* (teething-related diarrhea), *aborrecimento de criança* (childhood annoyance/irritability), and *mau fluído* (literally "bad fluid"; similar to the "evil eye"). Within this subcategory of medicinal plant use, the species most often cited (by 21.2% of the interviewees) was *Petiveria alliacea* L. (*mucuracaá* locally; guinea hen weed in English). Depending on the form in which it is prepared, *P. alliacea* presents varying degrees of toxicity, provoking insomnia, hallucinations, and dysfunction of the central nervous system (Oliveira *et al*., 2010). In Brazil, *P. alliacea* was first used during the time of slavery, because it was the principal ingredient in the preparation known as "*amansa senhor*" (another name for the plant itself, loosely translating to "master-be-gone" or "neutralize the master"), which was used by the slaves in order to make their masters apathetic and less inclined to mete out punishments (Camargo, 2007). In the São Sebastião neighborhood, *P. alliacea* is primarily used in the form of a decoction that is added to a bath as a treatment for *quebranto* or *mau olhado*. Apparently the use of these vegetables can relate to the biological activities provided their active ingredients with supernatural beliefs through which obtain the cure (Camargo, 2014). Citations for the treatment of "Cultural ills" is not restricted to the home gardens of interviewees in Brazil because Molares & Rovere (2016) in Argentina also reported the use of nine species, eight of which are native to that country.

Any or all parts of a given medicinal plant can be used in the preparation of herbal medicines. Among the individuals interviewed in the present study, the plant parts most often cited as being used in such preparations were the leaves (in 71.4%), the roots (in 8.9%), and the fruit (in 6.9%). Other studies of medicinal plants have also found that the leaves are the part of the plants that is most often used in the production of home remedies (Coelho-Ferreira & Jardim 2005; Leão *et al*., 2007; Aguiar & Barros, 2012). The preference for leaves might be related to ease of use and greater availability of leaves throughout the year (Brito & Senna-Valle, 2011).

The most commonly reported formulation of home remedies in the present study was decoction (tea, in 58.2%), followed by maceration into a bath (in 13.1%) and decoction into a bath (in 9.8%). The predominance of decoction tea has been reported in other studies of medicinal plants in the Amazon region (Leão *et al*., 2007; Siviero *et al*., 2012; Vásquez *et al*., 2014).

For the species identified here, the Total Species Diversity and Total Species Equitability were 47.43 and 0.383, respectively. The high Total Species Diversity indicates that there was considerable species variety among the medicinal plants identified. In other studies of urban home gardens (Althaus-Ottmann *et al*., 2011; Eichemberg *et al*., 2009), high species diversity was attributed to the rural origin of the interviewees (garden owners), who had come to cultivate various new species as a way of adapting to the urban environment. We observed the same in the São Sebastião neighborhood, where the majority of the interviewees were from rural communities and continued to grow plants in their home gardens.

As shown in Table 2, the species with the highest UVs in the present study were *Kalanchoe pinnata* (UVs-0.462); *Lippia alba* (UVs-0.425); *Aloe vera* (UVs-0.363); *Zingiber officinale* (UVs-0.292); *Petiveria alliacea* (UVs-0.288); *Fridericia chica* (UVs-0.283); *Costus spicatus* (UVs-0.274); *Morinda citrifolia* (UVs-0.255); *Eleutherine bulbosa* (UVs-0.241); *Cymbopogon citratus* (UVs-0.231) and *Psidium guajava* (UVs-0.231).

The species of the greatest relative importance, showing high UVs (*K. pinnata* and *L. alba*), were recommended as treatments for ailments affecting various human body systems (up to 10) or were cited multiple times as indicated for the treatment of conditions affecting a single body system. That suggests that there is strong pressure on these species due to their widespread use, because they are so widely known in the local community. *K. pinnata* was cited as a treatment for disorders of 10 body systems, compared with five for *L. alba*, the latter being recommended as a treatment for Circulatory Disorders by 55% of the interviewees and for Behavioural Disorders, including stress, insomnia, and depression, by 19%.

Studies such as that conducted by Almeida *et al.* (2000) have shown that leaf extracts of *K. pinnata* contain flavonoids, suggesting that these metabolites are gastroprotective and can heal gastric ulcers. Studies of *L. alba* have shown that it has antibacterial, antifungal, anti-ulcer, analgesic, anti-inflammatory, sedative, muscle relaxant, and anxiolytic properties (Pascual *et al*., 2001; Heinzmann & Barros, 2007; Aguiar *et al*., 2008). Those effects could explain the high use of those two species by the practitioners of folk medicine in the São Sebastião neighborhood.

Table 2 also shows that the species of medicinal plants with the highest IVs in São Sebastião were *L. alba* (IVs-0.104); *Mentha spicata* (IVs-0.090); *F. chica* (IVs-0.071); *A. vera* (IVs-0.052); *Mikania lindleyana* (IVs-0.052); *Gymnanthemum amygdalinum* (IVs-0.047); *Psidium guajava* (IVs-0.042); *Eleutherine bulbosa* (IVs-0.038) and *Morinda citrifolia* (IVs-0.038). We observed that the interviewees determined the importance of medicinal plant species on the basis of whether or not they had used it as a treatment and on the predominance of at-risk groups (children, the elderly, and pregnant women) within their family. Of the interviewees, 12% cited *L. alba* as the most important species for use in the treatment of high blood pressure, stress, and insomnia. For disorders affecting five different body systems, especially Infectious and Parasitic Diseases, *M. spicata* was cited by 88%. However, the interviewees who reported no longer using *M. spicata* attributed that change to an absence of children in the home but stated their willingness to grow the species again if grandchildren arrive.

Table 3

Informant Consensus Factors for health conditions that are reportedly treatable with the medicinal plant species grown in home gardens in the São Sebastião neighborhood of the city of Abaetetuba, in the state of Pará, Brazil. Nur – number of citations per category; Nt – number of species cited per category; ICF - Informant Consensus Factors.

Category	Nur	Nt	ICF
Infectious and parasitic diseases	333	53	0.84
Tumors (neoplasms)	50	6	0.90
Disorders of the blood/hematopoietic organs and certain immune system disorders	69	6	0.93
Endocrine, nutritional, and metabolic disorders	52	12	0.78
Central nervous system disorders	56	29	0.49
Ocular disorders	15	4	0.79
Diseases of the ear and mastoid process	31	4	0.90
Circulatory disorders	195	38	0.81
Respiratory disorders	189	37	0.81
Gastrointestinal disorders	207	34	0.84
Diseases of the skin and subcutaneous tissues	96	14	0.86
Diseases of the musculoskeletal system and connective tissue	50	8	0.86
Genitourinary disorders	157	33	0.79
Pregnancy, childbirth, and puerperium	20	4	0.84
Behavioral disorders	18	2	0.94
Trauma and poisoning	20	8	0.63
Symptoms and signs	56	23	0.60
Cultural ills	273	31	0.89

Table 3 shows the ICF values for the various ailments cited by the home garden owners interviewed in the present study. We divided those into 18 categories, of which 12 showed ICF values > 0.8. There were four categories in particular that were notable for their high relative importance (ICF values): Behavioural Disorders (0.94); Disorders of the Blood and Hematopoietic Organs (0.93); Ear Disorders (0.90); and Tumors and Neoplasms (0.90).

In a similar study Alves & Povh (2013) also found that the best consensus was for Behavioural Disorders, depression being the most frequently cited such disorder. According to Maioli-Azevedo & Fonseca-Kruel (2007), the medicinal plants for which there is the highest concordance among respondents are of great cultural importance for the local community, the extensive exchange of such species expanding the local knowledge base by virtue of the increased interaction. In addition, high ICF values can indicate which species merit further study in terms of their pharmacological properties (Almeida & Albuquerque, 2002).

As can be seen in Table 2 89 species (71.77%) were featured in previous pharmacological studies. For 37 of these species (41.57%), the uses cited by the residents in São Sebastião showed some similarity to the investigated effects/actions, demonstrating concordance between popular knowledge and academic science.

CONCLUSIONS

Although the home gardens studied here were in the urban zone of a relatively large city, their owners cultivated and used medicinal plants not only for therapeutic purposes but also as a reflection of their cultural heritage. However, in the study area, knowledge of the various species was not distributed in a uniform manner, which is likely attributable to the diversity of our sample of interviewees, in terms of their geographic origins. From a quantitative perspective, the heterogeneous distribution of knowledge was also evidenced by the low value of total species evenness.

The production of botanical knowledge in a community appears to be directly linked to the relationship that its residents have with the medicinal plants they grow in their home gardens. The local culture affects knowledge regarding the use of therapeutic plant resources, due to the interaction among groups of individuals of different geographic origins.

The existence of pharmacological studies that confirm the indications of interviewees demonstrates the importance of rescue and conservation of folk medicine both for the residents of São Sebastião and for science itself.

ACKNOWLEDGEMENTS

We are grateful to the São Sebastião community leaders, to Lenir Fagundes, and to the residents of the neighborhood, for their hospitality and willingness to share information. This study received financial support from the Graduate Program in Environmental Science at Pará State University.

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