# Traditional knowledge in medicinal plants and intermedicality in urban environments: a case study in a popular community in southern Brazil

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## Research

## Abstract

*Background:* Ethnobotanical studies have demonstrated the ability of different social groups to maintain and diversify plant knowledge in urban environments. This study characterizes the traditional knowledge about medicinal plants in a popular community in Porto Alegre metropolitan city, Brazil.

*Methods:* Semi-structured interviews were carried out with 28 people, four of whom were healers. Data were collected regarding the uses, ways of obtaining the plants, the origin of the interviewees and their knowledge. The mentioned species value of relative importance was calculated. Relationships between traditional and scientific medical knowledge (intermedicality) were characterized and discussed.

*Results:* The study identified a total of 237 plant species, most of them native to Brazil. The family with the highest number of representatives was Asteraceae (38), followed by Lamiaceae (17). Native and ritualistic species showed high values of relative importance. The main form of learning found was vertical, with mothers and grandmothers being the main ones responsible for teaching. Traditional knowledge is influenced by scientific medical care practices and the most significant use of herbs refers to the digestive system, followed by the respiratory system. The collection is the leading way of obtaining the plants.

*Conclusions:* The high number of species used, and the substantial knowledge repertoire, reflect the local sociocultural and environmental diversity and the vital role of women and healers in producing and transmitting this knowledge. Deepening ethnobotanical studies with healers and women is a way of enhancing traditional medicines in urban environments.

*Keywords:* urban ethnobotany, ethnomedicine, native species, ritualistic use, urbanization

## Background

Ethnobotany in urban environments constitutes a current research agenda attentive to the intense ecological and social transformations that began in the 1950s with the modernization of agriculture and the simultaneous urbanization of peripheral countries in the global south. The migration of large contingents of the rural population to the cities resulted in gathering a myriad of plant and animal species, as well as the associated traditional knowledge, in the urbanized environments. The new relationships between people and plants favored by the urban space caught the attention of researchers, casting other perspectives on the dynamics of (re)production of traditional knowledge associated with biodiversity (Almada 2011).

The phenomenon of urbanization was marked by an ideal of modernity for which the overcoming or eradication of "traditions" constitutes a necessary condition for capitalist production and reproduction (Escobar 1999). In this context, the marginalization of medicines considered "traditional", the associated ethnobotanical knowledge and its practitioners by the States was amplified, affecting their reproduction strategies in different countries of South America and Africa (Meneses 2005, Weber 1999, Xaba 2005). Despite the persecution and social stigma suffered, "traditional medicines" continued to exist in different parts of the planet, being legitimized by their practitioners and reconfigured in a modern and urban context (Loyola 1984, Meneses 2005).

From a theoretical point of view, the emergence of medical anthropology and the consequent recognition and legitimation of ethnomedicine highlighted the disease and treatments social and historical aspects, fostering the understanding of the traditional medicine's role, and of biomedicine itself, in specific contexts. In this way, mistaken and essentialized conceptions of traditional medicines reduced to outdated magical and ritualistic practices anchored in static beliefs were abandoned. Then, the idea of medical pluralism starts to advocate the integration of different medical systems, which takes place in discursive rather than practical terms (Greene 1998).

One of the objectives of this work is to characterize and analyze, based on community practices and perceptions, the relationship between different medical knowledge. The approach of "intermedicality" (Greene 1998, Foller 2004) provides an analytical key to discussing the dynamics and vitality of traditional medicines based on the use of plants in an urban context. Considering that capitalist domination and power relations establish the legitimacy of specific knowledge over others (McAlvay *et al.* 2021) without, however, reducing the encounter/contact to the conflict between scientific and traditional knowledge, intermedicality proposes to highlight the strategies and perceptions of the collectives when encouraged to adhere to the hegemonic biomedical discourse and practice (Foller 2004). Therefore, it considers practitioners' conscious agency in a contextualized space of hybrid medicines (Greene 1998). Thus, it is possible to understand what happens in these "contact zones" in which different medical traditions encounter, contextualizing the use of plants in changing cultural dynamics.

Regarding ethnobotanical knowledge, studies have found the ability of different social groups to re-signify or even expand the use of food and medicinal plants in urban areas (Emperaire & Eloy 2008, Hurrel *et al.* 2015, Nguyen 2003, Vandebroek & Ballick 2012). For these last authors, the results of these studies oppose the idea that traditional knowledge would be "losing" in an increasing and accelerated manner in the urban environment, a widespread narrative in academic settings. Often used as a justification for investigating this kind of knowledge (Elisabetsky & Wannmacher 1993, Soejarto 1996), this narrative disfavour the understanding of contemporary dynamics of knowledge production on biodiversity in cities. Although it can warn about violent processes of environmental degradation and epistemicide (Santos 2010), it can neglect the presence of traditional knowledge and plants' importance in maintaining autonomous food and medicinal practices in managed environments under the urbanization influence.

Recognizing the reciprocal and dynamic nature of relationships between humans and plants (Alexiades 1996) and the role of traditions in promoting adaptation to new scenarios (Carneiro da Cunha 2009, Emperaire 2001), this study characterizes and analyses medicinal plants traditional knowledge in a context of migrations and intercultural encounters derived from urbanization and modern medicine establishment in the community of Morro da Cruz, located in Porto Alegre, capital of the state of Rio Grande do Sul. Inspired by the ideas of Posey (1987), the ethnobotanical study seeks to establish bridges of understanding and dialogue between different botanical and medical knowledge, considering the record of species diversity and their uses according to traditional and scientific values and categories of knowledge production and organization.

## Material and Methods

### Study area: Morro da Cruz

The Morro da Cruz community and territory are inserted a Brazilian metropolis constituted through the rural exodus precipitated by the modernization of agriculture and by a hygienist and segregationist policy that expelled economically disadvantaged families from the Porto Alegre central regions from the 1950s onwards (Camp 1993, Jorge 1973, Meneghetti 1952). In this context, family farmers and black and indigenous people began to inhabit the slopes and tops of the *Morro da Cruz*. The region became densely populated in a few decades without offering public facilities and basic urban infrastructure.

The community trajectory is like others originated on the outskirts of global south medium and large cities that historically and daily faces the stigmas of poverty and violence produced by the "central" and "modern" space of cities (Fonseca 2004). The severe consequences generated by segregationist policies throughout the history of Porto Alegre city are evidenced by the available statistical data on the vulnerable socioeconomic, educational, and environmental conditions of the São José neighborhood (ObservaPoa 2021), as well as by the presence of drug trafficking and organized crime.

Morro da Cruz belongs to the *São José* district (30°04'40"S 51°09'40"W) and encompasses a mosaic of built-up areas, grasslands, forests, and cultivated and mineral exploration areas. One of the city's most significant fragments of native forest (*Mato Flores da Cunha*) offers different kinds of natural resources. The region, therefore, encompasses different typical ecosystems from the transition area between the Atlantic Forest and Pampa biomes (Fig. 1).

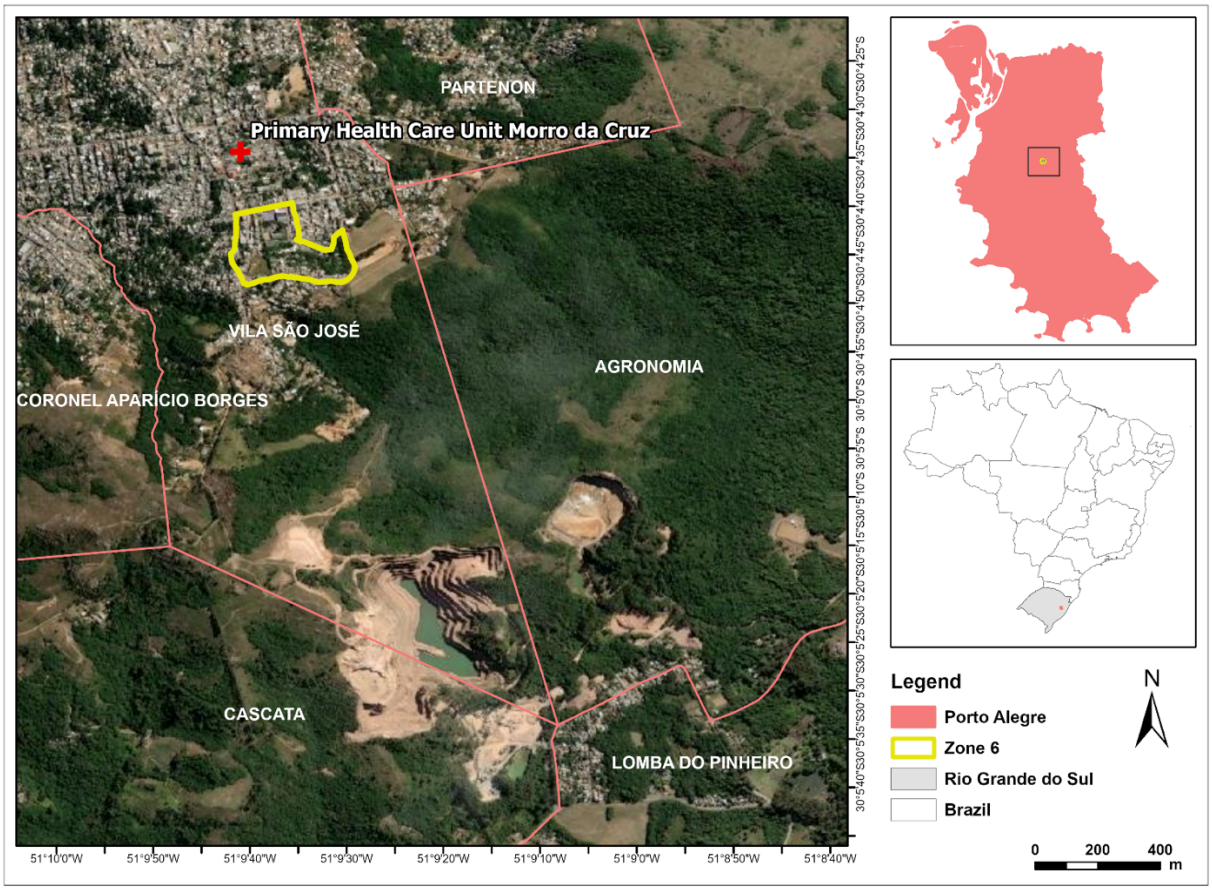


Figure 1. Location of the study area in Porto Alegre: Zone 6 and rural urban interface in *Morro da Cruz.* The pink lines delimit the city's neighborhoods.

Agricultural activities and vegetal extractivism are present as a source of food security and income, in addition to contributing to the support of a rural reference that (re)elaborates values linked to autonomy, health and tradition. In the community there are healers, experts in "tea herbs" who collect, cultivate and sell it at street markets, blessing healers (benzedeiras), a traditional midwife, numerous African origin cultural manifestations houses (Umbanda,

Nação-Batuque and Quimbanda), Catholic and Evangelical churches, in addition to other experts and spaces that offer treatments for physical, emotional and spiritual disorders.

**Data Collection and analysis**

The ethnobotanical research was conducted with two distinct interviewee groups: a group of four traditional healers recognized in the community for their knowledge of medicinal plants and another group formed by representatives of 24 families assisted by the Primary Health Care Unit Morro da Cruz, a public research partner institution. With the representatives of this last group, a single interview was carried out, while, with the traditional healers, the field research involved at least a two-year continued contact.

The representatives of the 24 families belonged to a specific zone served by the primary health care unit, zone 6, which presented social and environmental vulnerability (Fig.1). Field research in this area sought to complement the diagnosis of health surveillance carried out by the unit and support health care promotion actions. The interviews followed a semi-structured script.

The most in-depth field research was conducted over two years with four traditional therapists: a midwife, two herbalists, one of whom was a spiritual leader (Pai-de-Santo), and a community leader. The research with traditional therapists aimed to broaden the understanding regarding the role of plants in treatments, the local categories of herb classification and the relationship between traditional and biomedical knowledge in the context of advancing urbanization.

Living together in their homes, preparing recipes, observing cultivation, collection, marketing and assistance with plants and prayers, and participating in university extension projects in partnership with local primary health care units (Casagrande *et al.* 2013) constituted spaces for carrying out the research. Semi-structured interviews, guided walks, participant and direct observation and interviews with open questions were carried out, without structure or control, through the annotation of data during the conversation (Alexiades 1996) to favor greater freedom of expression of the healers in an exercise of attentive listening to their categories and concepts (Posey 1987).

Uses of medicinal plants, popular names, ways of obtaining herbs, perceptions and categorizations of plants and diseases and their relationship with biomedical treatments were surveyed among healers and residents. The research also addressed aspects such as gender, age, form of knowledge transmission (vertical, horizontal, or oblique) (Cavalli-Sforza *et al.* 1982), religious choice and community residence length. Research records were made through photographs, audio recordings, field diaries and notes during interviews and observations.

An herbarium with exsiccates of 72 medicinal plants collected in the study area and produced under the guidance of traditional healers was used as support material for the interviews. The species mentioned were identified in the field or collected for later botanical identification with the help of specialists and botanical identification keys. As the species surveyed are common and the samples were not always fertile, there was no deposition of the plants in Federal University of Rio Grande do Sul herbarium, which has a limited capacity. The classification system used for Angiosperm families was APG IV (2016). The valid names of the species and their respective botanical families were confirmed in the Tropicos (2021), WFO (2021) and Flora e Funga do Brasil (2021) databases. Plants were categorized according to their botanical origin as native, naturalized, cultivated and exotic (Flora e Funga do Brasil 2021). Likewise, traditional knowledge categories related to use and species occurrence were considered.

The ethnobotanical information collected from the interlocutors of zone 6 was used to calculate the plant's relative importance value. It is an index that evaluates the number of informants who cited them and the agreement of the mentioned uses. They were calculated according to the methodology adapted by Amorozo and Gely (1988), generating a fidelity index expressed by: CUP = (ICUP/ICUE) x 100, in which: ICUP = number of informants citing the main use of the species and ICUE = total number of informants citing use of the species.

A correction factor (FC) was calculated for each species, corresponding to the number of informants who mentioned each species (ICUE), divided by the number of informants who mentioned the most cited species (ICEMC), allowing the extraction of importance values related to the species most cited by informants (CUPc): FC = ICUE/ICEMC and CUPc= CUP X FC. These statistical data were discussed according to qualitative information about the species with the highest value of relative importance.

## Results and Discussion

### Interviewees profile

Regarding the origin, most of the interviewees came from rural areas situated in the state of Rio Grande do Sul (57%) (Fig. 2), which agrees with other ethnobotanical studies carried out in Porto Alegre (Piccinini 2008, Vendruscolo 2004).

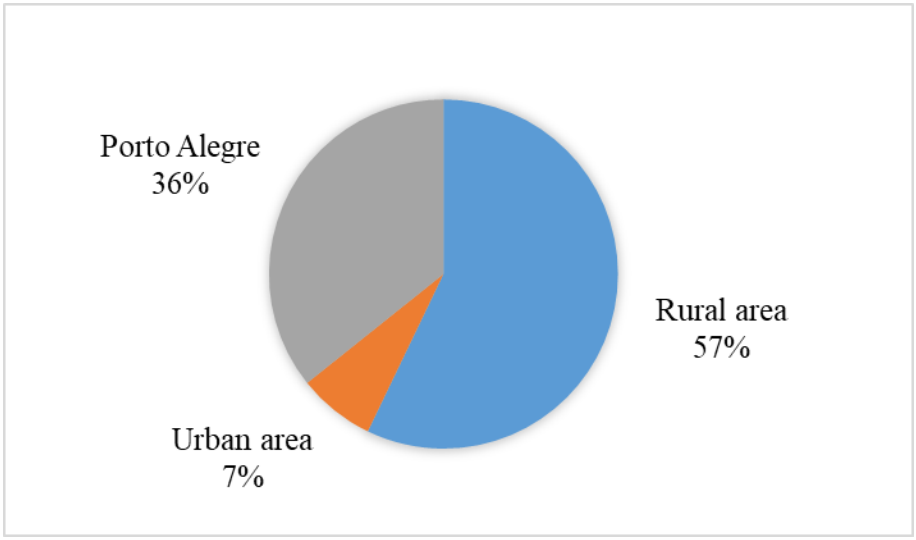


Figure 2. Interviewees origin

The residence length in Morro da Cruz ranged from four to 68 years and at the time of the survey 57% of the interlocutors had lived in the community for more than 20 years (Fig. 3). The average age of the interviewees was 47 years.

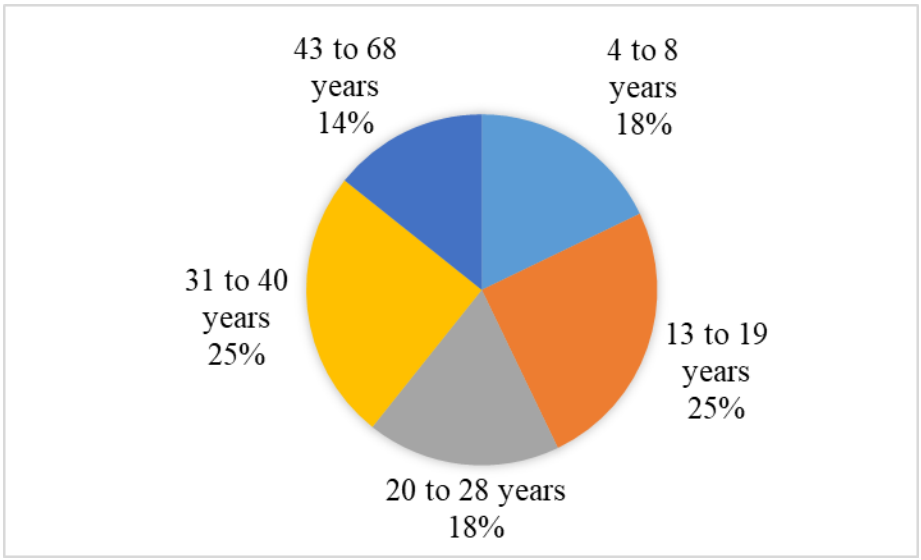


Figure 3. Residence length in Morro da Cruz

Among the 28 people interviewed, including the specialists, 23 were women. Ethnobotanical studies on medicinal plants carried out in areas affected by urbanization primarily relied on the participation of women in the interviews, reaching 90% in some communities studied (Ávila *et al.* 2015, Piccinini 2008, Vendruscolo 2004). In addition to these studies, Leal (1992), Marques *et al.* (2015) and Da Silva and Zank (2022) draw attention to the role of women in family and community health promotion, which could also be observed in *Morro da Cruz*. Comparative studies between the local botanical knowledge of women and men from the same community can provide clues on how this protagonism is constituted and on the role of gender in structuring knowledge patterns of transmission. Da Costa *et al.* (2021), for example, concluded that women know a more significant number of plant species and share more knowledge about the use of plants than men.

The most cited religious option was Catholic, followed by Evangelical and Umbanda. Some people reported not following any religion, as well as having experienced different religious beliefs throughout their lives. Regarding the specialists, all were practitioners of one of the mentioned religions, having also belonged to other religions. The experiences and religious ties of the midwife and one of the herbalists were closely related to their practices in traditional medicine.

**Ethnobotanical knowledge origin**

Regarding the origin of knowledge about plants, 61 % of the interviewees referred to the contribution of the mother, 25% referred to grandmother and 18% to other female relatives (aunt, sister, mother-in-law, sister-in-law), which reinforces the female importance in producing knowledge. Other relatives such as the father (18%), local experts, healers, and herbalists (18 %) and grandfather (7%) was also mentioned. In addition to the domestic sphere, knowledge is also exchanged between friends and people from the same religious community, neighborhood, and workplace. It can be observed, therefore, that the vertical type of form of knowledge transmission (between parents and children) was the most representative. However, the transmission between unrelated people of different generations (oblique type) and between people of the same generation (transmission horizontal) also occurs. Radio, television and scientific dissemination literature were cited as sources of learning about medicinal plants.

One of the herbalists recognizes his indigenous paternal grandmother (Kaingang indigenous people) and father as the primary references in his learning about medicinal plants. He inherited the craft of an herbalist from his father, prescribing and selling herbs in a street trading stall in Porto Alegre central region. During the field research, another four herbalists who provided medical and spiritual care using plants cultivated and collected in the metropolitan area of Porto Alegre forests and grasslands were identified, in addition to the two herbalists interviewed. One of them was an apprentice of one of the herbalists who attended the study. In this case, the constitution of a masculine craft, the herbalist, was observed with knowledge transmission of the vertical or oblique type.

Like one of the herbalists, the community leader is also the daughter of a medicinal plant traditional specialist. She also inherited the practice of helping the people with popular medicine:

> "...what I learned, I learned from my father. On his days off or when he came from the countryside, he would bring the herbs and make his homoeopathic medicine at home. It was the wisdom he said God had given him. It was free of charge. What you get for free, you give for free. He never charged anything from his patients."

The midwife, a black woman from a rural community, recognizes in the divine gift the origin of her knowledge about herbs and her vocation as a therapist, improved by daily practice:

> "It was a gift that God gave me [...] when I was five years old, I was already making medicine, and I was already healing adults and children with herbs. My mother didn't know much. Even she was amazed. My father was amazed. How could a five-year-old girl know so much? I used to prescribe medicine. I used to bless since I was little. I learned by doing".

Studies with traditional healer's report that awakening to this gift, or learning, also occurred or started in childhood (Attuch 2006, Da Silva & Zank 2022, Loyola 1984, Quintana 1998). Throughout her life, the midwife developed her mediumship, the midwife practice and spiritual leadership with the various religions she attended. Still, she also accessed scientific obstetric knowledge when she took a midwifery course taught by a nurse. Although she had invested resources and time in her training as a midwife, she delivered children mostly free of charge.

Regarding the conditions for traditional medicine knowledge transmission, healers expressed concern since few younger people were interested in learning about medicinal plants. According to them, the factors that negatively affect this learning were related to the advance of urbanization in natural areas and the persecution of traditional healers, either by the affirmation of biomedicine as the only legitimate care practice or by an urban occupation hygienist policy that excluded the herbalists and their plant commercialization stalls from the central space of the city, a fact that was observed during the development of this research.

**Medicinal plants and traditional and biomedical treatments: intermedicality and conflict**

All interviewees stated that they prefer to use medicinal plants before seeking conventional medical care, especially when symptoms were mild. Family tradition and autonomy over health care and low or non-existent side effects or costs were factors that justify the preference for medicinal plant treatments. In addition, all research participants showed interest in learning more about medicinal plants and expressed a positive opinion about incorporating phytotherapy into the public health system services.

The preference for primary health care using plants does not exclude the search for biomedical treatments. Regarding the resolution of health problems, it is recurrent that community people adopt different strategies and resources. An example is that sixty-two per cent (62.5%) of those interviewed claimed to use medicinal plants and synthetic drugs simultaneously to treat flu, colds, infections, ulcers, pain, high cholesterol and blood pressure and diabetes. The coexistence and combined use of medicinal plants and synthetic medicines is discussed in research conducted with different communities, ethnic groups, and places in Brazil (Amorozo 2004, Soldati & Albuquerque 2011, Zank & Hanazaki 2017). These authors recognize the same motivations and factors that explain the demand and appropriation of biomedical treatments in this study. Among these, the main ones were the expansion of the offer and the development of treatments for diseases identified by biomedicine, such as high blood pressure and diabetes, which reflect changes in life habits.

In addition to biomedical monitoring, diets, fasting, physical activities, rituals, blessings, and prayers were care practices associated with plant treatments. The midwife recognizes that she has a series of illnesses, many of a spiritual nature, which requires continuous vigilance through prayers, fasting, teas and synthetic drugs and a strict diet that excludes "strong" foods of red and black colors, condiments, coffee and fried, among others. *Erveiro* and *Pai-de-Santo* treat his high cholesterol and blood pressure through periodic medical check-ups in which the diagnosis of laboratory tests guides his consumption of teas and physical activities. Furthermore, according to the healers, faith is the mediating and central element of the treatments, expressed in a feeling or a personal belief in the healing supported by religious and spiritual practices. The centrality of faith presupposes a local cosmovision for which good health depends on the integrated care of the body's physical, emotional, and spiritual aspects. In this way, the search for a cure through plants goes beyond the simple use of specific substances for certain disorders, unlike the logic that underlies the disease biomedical organicist conception. From this conception, resources and knowledge of biomedicine were mobilized with the objective of health care and maintenance of practices in traditional medicine.

Scientific and traditional knowledge circulate and interconnect from the personal and collective experience, giving rise to specific appropriations. The example of synthetic drugs that lend their names to plants destined for the same symptoms and diseases is emblematic. Plants named **ampicillin**, **penicillin** (*Alternanthera brasiliana* (L.) Kuntze) and **insulin** (*Sphagneticola trilobata* (L.) Pruski) indicate these appropriations (Table 1). In the same vein, the midwife recognizes that the plant world is connected to the world of synthetic pills containing plant ingredients in their composition.

The compatibility between biomedical and traditional treatments is a strategy used by the community and the healers. In addition, the healers revealed that they seek scientific knowledge to improve their practices. The midwife took a training course in obstetric care with a nurse, and the herbalists studied plants by consulting scientific literature. On the other hand, the traditional medicine valorization and appropriation do not reflect the current practice of public health services.

The examples of biomedicine knowledge and techniques appropriations reported above were strategies of resistance and affirmation of traditional medicines, reinforcing their dynamic and innovative character, as also identified by Greene (1998), Foller (2004) and Soldati and Albuquerque (2011). This process, however, is usually marked by tensions and conflicts due to the disqualification that the biomedical power (Foller 2004) imposes on traditional medical systems.

Table 1. Botanical families, scientific and popular names, origin, and uses of the cited species, followed by the importance values related to the species most cited by informants (CUPc). Plants without CUPc were cited exclusively by the healers.

| Family / Species | Popular name | Origin | Medicinal uses | Women's and children's health | Ritual | Food | CUPc |
|---|---|---|---|---|---|---|---|
| **Lichens** | | | | | | | |
| Parmeliaceae | | | | | | | |
| *Usnea* sp. | flor-da-pedra | Native | Kidney stones, gallbladder and urethra problems. | | | | |
| **Ferns and lycophytes** | | | | | | | |
| Equisetaceae | | | | | | | |
| *Equisetum hyemale* L. | cavalinha | Cultivated | Prostate problems. | | | | |
| Pteridaceae | | | | | | | |
| *Adiantopsis chlorophylla* (Sw.) Fée | samambaia-roxa | Native | Rheumatism, kidney problems and infections. | | | | |
| *Adiantum raddianum* C. Presl | avenca | Native | Fever, to regulate blood pressure, lung problems and bronchitis. | | | | 0 |
| **Gymnosperms** | | | | | | | |
| Araucariaceae | | | | | | | |
| *Araucaria angustifolia* (Bertol.) Kuntze | pinheiro | Native | Muscle pains, toothache, earache, rheumatism and sore throat. | | | Edible seed | |
| Pinaceae | | | | | | | |
| *Pinus* sp. | pinus | Naturalized | To strengthen the hair and to increase physical vigor. | | | | |
| **Angiosperms** | | | | | | | |
| Adoxaceae | | | | | | | |
| *Sambucus australis* Cham. & Schltdl. | sabugueiro | Native | Measles, chickenpox, mumps, oral candidiasis, fever, cold, flu, bronchitis, asthma, intestinal infection and blood cleansing. | Measles, chickenpox, mumps, oral candidiasis, fever, bronchitis and asthma in children. | | | 26.086 |
| Alismataceae | | | | | | | |
| *Echinodorus* sp. | chapéu-de-couro | Native | Back problems, back pains, rheumatism, uric acid and inflammations. | | | | |
| Amaranthaceae | | | | | | | |
| *Alternanthera brasiliana* (L.) Kuntze | penicilina, penicilina-em-rama, ampicilina | Native | Infections, flu, renal colic, wounds and inflammations. | Vulva, vagina, uterus and ovaries infections. | | | 13.043 |
| *Alternanthera* sp. | calmador | | Pain relief. | | | | 0 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Amaranthus viridis* L. | caruru | Naturalized | Rheumatism, stomach and bowel problems and varicose veins. | | | Edible leaves | 30.434 |
| *Beta vulgaris* L. | beterraba | Cultivated | Anemia, bronchitis and as a tonic. | | | Edible leaves and roots | 0 |
| *Dysphania ambrosioides* (L.) Mosyakin & Clemants | santa-maria, erva-de-santa-maria | Naturalized | Worm problems, stomach pains, intestinal gas, laxative, hemorrhoids, wounds, scabies, cramps, flu, sand flea and as insect repellent (fleas and moth). | Worms and abdominal pain in children. | | | 17.391 |
| Amarillidaceae | | | | | | | |
| *Allium ampeloprasum* L. | alho-graúdo, alho-macho | Cultivated | Flu. | Contraceptive. | | Edible bulbs | 0 |
| *Allium cepa* L. | cebola | Cultivated | Vomits and cough. | To regulate menstruation. | | Edible bulbs | 8.695 |
| *Allium sativum* L. | alho | Cultivated | Lung problems, flu, sinusitis, toothache, earache, infections and snake and spider bites. | | Spiritual protection, evil eye. | Edible bulbs | 13.043 |
| Anacardiaceae | | | | | | | |
| *Lithraea brasiliensis* Marchand | aroeira, aroeira-bugre | Native | Allergies and wounds. | | | | 0 |
| *Mangifera indica* L. | manga | Cultivated | Diabetes, low blood sugar and to improve physical and mental disposition. | | | Edible fruit | |
| *Schinus molle* L. | resineira | Native | Bot. | | | | |
| Annonaceae | | | | | | | |
| *Annona sylvatica* A.St.-Hil. | araticum, graviola, fruta-do-conde | Native | Head lice, slimming and hhigh glucose and cholesterol rates. | | | Edible fruit | |
| Apiaceae | | | | | | | |
| *Anethum graveolens* L. | endro | Naturalized | Flu, cough, stomach problems and nausea. | | | | 8.666 |
| *Cyclospermum leptophyllum* (Pers.) Sprague ex Britton & P.Wilson | aipinho-do-banhado, aipo-do-mato | Native | High blood pressure and diarrhea. | | | | 0 |
| *Daucus carota* L. | cenoura | Cultivated | Bronchitis, anemia, vision problems and to improve physical and mental disposition. | | | Edible leaves and roots | 0 |
| *Foeniculum vulgare* Mill. | funcho | Naturalized | Constipation, diarrhea, worms, intestinal gas, sedative, flu, lung problems, tuberculosis and sinusitis. | Flu, cough, gas, colic, worms and diarrhea in babies and children, to stimulate lactation and for soothing. | | | 56.521 |

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|---|---|---|---|---|---|---|---|
| *Petroselinum crispum* (Mill.) Fuss | salsinha, salsa | Cultivated | Jaundice, hepatitis and urinary tract infection | | Evil eye. | Edible leaves | |
| *Pimpinella anisum* L. | erva-doce | Cultivated | Colic, constipation, cough and as a sedative. | Soothing, cough and colic in babies and children. | | Aromatic seeds | 26.086 |
| Aquifoliaceae | | | | | | | |
| *Ilex paraguariensis* A.St.-Hil. | erva-mate | Native | High cholesterol. | To detach the placenta during childbirth. | | Leaves for tea | 0 |
| Araceae | | | | | | | |
| *Dieffenbachia seguine* (Jacq.) Schott | comigo-ninguém-pode | Native | | | Evil eye, baths for spiritual protection. | | 47.826 |
| *Monstera deliciosa* Liebm. | costela-de-adão | Cultivated | | | Baths for spiritual protection. | | 8.666 |
| Arecaceae | | | | | | | |
| *Syagrus romanzoffiana* (Cham.) Glassm. | coqueiro, coqueiro-da-raiz-vermelha | Native | Rheumatism; "for everything". | | | Edible fruits | 0 |
| Aristolochiaceae | | | | | | | |
| *Aristolochia triangularis* Cham. & Schltdl. | cipó-mil-homens, cipó-milome | Native | To cleanse the blood, infection, slimming, stomach and liver problems, rheumatism, sexual impotence, flu, injuries, muscle pain, backache, toothache, headache, sore throat and as a diuretic; "for everything". | Abortive. | | | 8.695 |
| Asparagaceae | | | | | | | |
| *Aloe arborescens* Mill. | babosa | Cultivated | Wounds, infections, boils, dandruff, rejuvenating, suitable for hair and skin, lung problems, bronchitis, cough, sinusitis, ulcer, gastritis, bowel problems, laxative, cirrhosis, diabetes, high blood pressure, cancer, body and abdominal pain. | | | | 60.868 |
| *Aloe vera* (L.) Burm. | babosa | Cultivated | Wounds, skin burns and to strengthen the hair. | | | | 8.695 |
| *Sansevieria trifasciata* Prain | espada-de-são-jorge, espada-de-santa-catarina | Cultivated | | | Evil eye, baths for spiritual protection. | | 65.2 |

| Asteraceae | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Acanthospermum australe* (Loefl.) Kuntze | carrapicho-rasteiro, carrapichinho-miúdo, carrapichinho-do-mato | Native | Inflammations, toothache, back pain, diarrhea, kidney problems and men venereal diseases. | Female reproductive and urinary system infections, vaginal discharge and uterine pain. | | | 0 |
| *Achillea millefolium* L. | ponta-alívio, mil-em-rama, ponto-alívio, dipirona | Naturalized | Flu, fever, wounds, pneumonia, tetanus and liver problems. | Flu and pneumonia in children. | | | 8.695 |
| *Achyrocline satureioides* (Lam.) DC. | marcela | Native | Sore throat, lung problems, flu, cough, decongestant, stomachache, laxative, digestive, vomit, diarrhea, high cholesterol; "for everything". | To detach the placenta during childbirth, stomach pain, colic and constipation in newborn babies and children. | | | 65.217 |
| *Ageratum conyzoides* L. | erva-de-são-joão | Native | Soothing, insomnia, stress and depression. | | | | |
| *Arctium minus* (Hill) Bernh. | bardana | Naturalized | Liver, stomach and intestinal problems, diabetes, allergies, rheumatism, wounds, mycoses, boils and mumps. | Ovaries inflammation. | | | |
| *Artemisia absinthium* L. | losna, losma | Cultivated | Stomach and liver problems, stomachache, anemia and hiccups. | | | | 21.739 |
| *Artemisia alba* Turra | alcanfor | Cultivated | Pains, toothache, rheumatism and swollen throat. | Abortive. | | | |
| *Baccharis anomala* DC. | erva-da-jurema, parreirinha, parreirinha-do-mato | Native | Cancerous wound. | | Baths for spiritual protection. | | |
| *Baccharis articulata* (Lam.) Pers. | carquejinha, carqueja, carqueja-miúda | Native | Stomach and liver problems, abdominal pain, digestive, diabetes, high cholesterol, appetite loss, slimming, flu, shortness of breath, lung problems, infection, cleans the blood, back pain and headache. | Heartburn in pregnant women. | | | 34.782 |
| *Baccharis patens* Baker | alecrim | Native | Flu, anemia and liver problems. | | Baths for spiritual protection. | | 0 |

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| *Baccharis psiadioides* (Less.) Joch.Müll. | vassourinha do mato, chapanã, lixiguana ou vassourinha-de-chapanã | Native | Hemorrhoids, poison intoxication, back pain and replenishes stomach flora. | Emmenagogue. | Baths for spiritual protection. | | 0 |
| *Baccharis riograndensis* Malag. & J.Vidal | carqueja, carquejinha | Native | Flu, slimming, appetite loss and as a digestive. | | | | 0 |
| *Baccharis crispa* Spreng. | carquejão, carqueja | Native | Stomach problems, stomachache, slimming, flu, shortness of breath, lung problems, infections, back pain and headache. | Heartburn in pregnant women. | | | 26.086 |
| *Bidens pilosa* L. | picão | Naturalized | Digestive, diarrhea, urinary tract infection, hepatitis, jaundice, weakness, anemia, circulatory problems, rheumatism, anti-inflammatory, lung cleansing and depression. | Abortive. | Baths for spiritual protection. | | 8.666 |
| *Calea pinnatifida* (R.Br.) Less. | quebra-tudo | Native | Stomach and liver problems, clogged veins and high cholesterol. | | Baths for spiritual protection, to undo spells and attract money. | | 13.043 |
| *Calendula officinalis* L. | calêndula | Cultivated | Wounds healing. | | | | 0 |
| *Chaptalia nutans* (L.) Pol. | arnica-do-mato | Native | Wounds, bruises, scabies, infections and anti-inflammatory. | | | | 8.695 |
| *Cichorium* sp. | chicória | Cultivated | Anemia and bronchitis. | | | Edible leaves | 0 |
| *Conyza bonariensis* (L.) Cronquist | buva | Native | Pains, wounds, ulcers and stomach problems. | | | | 0 |
| *Cynara scolymus* L. | alcachofra | Cultivated | Stomach, liver and gallbladder problems, digestive problems, slimming, diabetes, high cholesterol and blood pressure. | | | | 0 |
| *Moquiniastrum polymorphum* (Less.) G. Sancho | cambará | Native | Flu, cough, asthma, bronchitis. | | | | 0 |
| *Lactuca sativa* L. | alface | Cultivated | | To stimulate lactation. Flu, cough and as an expectorant for children. | | Edible leaves | |
| *Lucilia acutifolia* (Poir.) Cass. | erva-pombinha | Native | Infections, kidney stones, gallbladder stones, bladder problems and as a diuretic. | Ovarian infection. | | | 0 |

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| *Matricaria recutita* L. | camomila, maçanilha | Naturalized | Soothing, colic, constipation, stomach and heart problems, diabetes, flu, wounds, conjunctivitis, good for eyes, fortifies hair roots and to lighten skin blemishes. | Flu in children and pregnant woman, colic, constipation and as a sedative for children. | | | 65.217 |
| *Mikania glomerata* Spreng. | guaco | Native | Flu, cough and as an expectorant. | Flu in children, cough and as an expectorant | | | 21.739 |
| *Mikania laevigata* Sch. Bip. ex Baker | guaco, guaco-do-mato | Native | Lung problems, cough, flu, bronchitis, asthma and cold. | Flu in children. | | | 65.217 |
| *Noticastrum gnaphalioides* (Baker) Cuatrec. | arnica | Native | Infection, wounds and bruises. | | | | |
| *Pluchea sagittalis* (Lam.) Cabrera | quitoco, arnica, arnicão-da-praia, lucero | Native | Pain, inflammation, bruises, wounds, infection and blood thinning. | | | | 0 |
| *Senecio brasiliensis* (Spreng.) Less. | maria-mole | Native | Wounds, scabies, mycosis, bleeding and cancer that generates body wounds | Children wounds, scabies and mycosis. | | | 12.975 |
| *Solidago chilensis* Meyen | buva, lanceta, voadeira | Native | Wound, ulcer, gastritis and inflammations. | | | | 0 |
| *Sonchus oleraceus* L. | serralha, serraia | Native | Fortifying, good for the intestines and high cholesterol. | | | Edible leaves | 26.086 |
| *Sphagneticola trilobata* (L.) Pruski | mal-me-quer, insulina | Native | Bleeding and diabetes. | | | | 0 |
| *Stenachaenium campestre* Baker | arnique, arnica, arnica-do-campo | Native | Cough, flu, pain, inflammation, infection, blood infection, bruises, rheumatism, as an expectorant; and "for everything". | | | | 8.666 |
| *Tagetes minuta* L. | picão-do-reino, chinchia, chinchilha, cincilho, artemísia | Naturalized | Blood cleansing, hangover, cough, flu, asthma, respiratory diseases and flea and chicken louse repellent. | Emmenagogue. | | | 0 |
| *Tanacetum parthenium* (L.) Sch.Bip. | artemigia, catinga-de-mulata, camomila, artemísia | Naturalized | Stomach problems, urinary tract infection, pain and headache. | Abortive, emmenagogue, contraceptive, postpartum depression and uterine infection | | | 8.666 |
| *Tanacetum vulgare* L. | catinga-de-mulata, catinga-de-mulata, palma, palminha, palma-crespa | Naturalized | Pain, bruises, toothache, swollen throat, infection, wounds, mouth ulcer, ulcer, stomach, and liver problems and rheumatism. | Postpartum depression, vaginal discharge and as an emmenagogue. | | | 8.666 |

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| *Taraxacum officinale* F.H. Wigg. | radite-do-mato, radite, dente-de-leão, almeirão | Naturalized | Good for health and liver, prostate cancer, diabetes and bowel problems. | | | Edible leaves | 30.434 |
| *Xanthium spinosum* L. | abrofo, abronco, carrapicho-de-carneiro, carrapichão, carrapicho-do-mato, abrofo | Naturalized | Bronchitis, asthma, lung catarrh, tuberculosis, laxative, spasm, and paralysis. | Children spasm and paralysis. Abortive. | | | 0 |
| Basellaceae | | | | | | | |
| *Anredera cordifolia* (Ten.) Steenis | erva-gorda, folha-gorda, tapa-buraco | Native | Boils, insect bites and wounds. | | | | 0 |
| Bignoniaceae | | | | | | | |
| *Dolichandra unguis-cati* (L.) L. Lohmann | unha-de-gato | Native | Rheumatism and bone problems. | | | | |
| *Handroanthus heptaphyllus* (Vell.) Mattos | ipê-roxo | Native | Cancer, back inflammation; "for everything". | | | | 0 |
| *Tynanthus cognatus* (Cham.) Miers | cipó-cravo | Native | Toothache, soothing and good for memory. | | | Aromatic vine (tastes like clove). | |
| Boraginaceae | | | | | | | |
| *Symphytum officinale* Linn. | confrei | Cultivated | Wounds, pains, bruises, rheumatism, diabetes and high cholesterol. | | | | |
| *Varronia curassavica* Jacq. | balera, baleinha, baleeira | Native | Diarrhea, abdominal pain, stomach problems, wounds, cancer, arthritis, osteoarthritis, osteoporosis, gout, inflammations and varicose veins. | | | | 8.666 |
| Brassicaceae | | | | | | | |
| *Brassica oleracea* L. | couve | Cultivated | Pain relief and wounds. | | | Edible leaves | |
| *Brassica oleracea var. capitata* L. | repolho | Cultivated | Pain relief and rheumatism. | | | Edible leaves | |
| *Brassica rapa* L. | nabo-branco | Naturalized | Fortifying. | | | Edible roots | |

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| *Coronopus didymus* (L.) Sm. | menstruz, menstruço | Naturalized | Stomach problems, alcoholism, muscle pain, bruises, wounds, torticollis, back and nerve problems, rheumatism, inflammations, lung problems, sinusitis, bronchitis, tuberculosis, flu and cough. | Contraceptive, and to warm the baby's body. | | Edible leaves | 34.782 |
| *Lepidium bonariense* L. | urinária, mijadeira | Native | Migraine, diabetes, high cholesterol, slimming, bladder inflammations, kidney stones and as a diuretic. | Uterine and ovarian problems. | | | 0 |
| *Rorippa nasturtium-aquaticum* (L.) Hayek | agrião | Cultivated | Cough, flu, pneumonia, cancer and as an expectorant. | | | Edible leaves | 26.086 |
| Bromeliaceae | | | | | | | |
| Ananas cf. bracteatus (Lindl.) Schult. & Schult.f. | ananás | Native | | Abortive. | | Edible pseudofruit | |
| *Ananas comosus* (L.) Merr. | abacaxi | Native | Improves breathing and bronchitis. | | | Edible pseudofruit | |
| *Bromelia antiacantha* Bertol. | bananinha-do-mato, banana-do-mato | Native | Flu, asthma, cough, bronchitis and for lungs cleansing. | | | | 8.695 |
| Cactaceae | | | | | | | |
| *Cereus hildmannianus* K. Schum. | tuna, cacto | Native | Cancer, whooping cough and alcoholism. | | | | 0 |
| *Opuntia monacantha* Haw. | cacto | Native | Cancer and whooping cough. | | | | |
| Cannabaceae | | | | | | | |
| *Celtis iguanaea* (Jacq.) Sarg. | coronilha | Native | Rheumatism, osteoporosis, slimming and high cholesterol. | | | | |
| Caricaceae | | | | | | | |
| *Carica papaya* L. | mamão, mamoeiro | Naturalized | Ulcer, gastritis, cleanses the stomach, pesticides poisoning, malaria, mind and body fortifier. | | | Edible fruit | 0 |
| Celastraceae | | | | | | | |
| *Monteverdia ilicifolia* (Mart. ex Reissek) Biral | espinheira-santa, cancorosa | Native | Stomach problems, gastritis, throat infection, back and kidney problems, rheumatism, syphilis and blood cleansing. | Allergies and sores in the vagina. | | | 0 |
| Commelinaceae | | | | | | | |
| *Commelina* sp. | onda-do-mar-verde, erva-de-santa-luzia, borboletinha | | Conjunctivitis and good for the eyes. | | Baths for spiritual protection | | 0 |

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| *Tradescantia zebrina* Heynh. ex Bosse | onda-do-mar | Naturalized | Good for the intestines and kidneys. | | | | |
| Convolvulaceae | | | | | | | |
| *Ipomoea batatas* (L.) Lam. | batata-doce, batata-doce-roxa | Naturalized | Diabetes, toothache, inflammations, swollen throat, brain and bone fortification, kidney problems and as a diuretic. | | | Edible leaves and roots | 0 |
| Crassulaceae | | | | | | | |
| *Kalanchoe pinnata* (Lam.) Pers. | folha-da-fortuna | Naturalized | Malnutrition and diabetes. | | | | |
| *Sedum dendroideum* DC. | bálsamo | Cultivated | Asthmatic bronchitis and as an expectorant. | | | | |
| Cucurbitaceae | | | | | | | |
| *Cayaponia martiana* (Cogn.) Cogn. | tajujá | Native | Lung problems, blood cleansing and "for everything". | | | | 0 |
| *Cucurbita moschata* Duchesne | abóbora | Cultivated | Worms. | | | Edible fruit and seeds | |
| *Luffa operculata* (L.) Cogn. | buchinha, buchinha-do-norte | Native | Sinusitis and enlarged adenoids. | Abortive. | | | 0 |
| *Sicyos edulis* Jacq. | chuchu-branco, chuchu | Naturalized | High blood pressure and diabetes. | | | Edible fruit and seed | 17.391 |
| Dioscoreaceae | | | | | | | |
| *Dioscorea* sp. | cipó-japecanga | Native | Gastritis and other stomach problems. | | | | |
| Erythroxylaceae | | | | | | | |
| *Erythroxylum argentinum* O.E. Schulz | cocão | Native | Cancer. | | | | |
| Euphorbiaceae | | | | | | | |
| *Croton cf. gnaphalii* Baill. | erva-da-graça, erva-pombinha | Native | Slimming, high cholesterol, bladder inflammation, urinary problems, thyroid, gallbladder and liver problems, bitter taste in the mouth and swelling | | | | |
| *Euphorbia prostrata* Aiton | quebra-pedra-rasteiro, quebra-pedra | Native | Kidney, gallbladder and bladder stones and blood cleansing. | | | | 65.217 |
| *Euphorbia tirucalli* L. | azeloz | Cultivated | Cancer and wounds. | | | | |
| *Manihot esculenta* Crantz | aipim | Native | To strengthen brain and bones. | | | Edible roots and leaves | |
| *Ricinus communis* L. | mamona, mamoneira | Naturalized | Boils, hemorrhoid, pain, mycosis, wound, abscess and purgative. | | | | 13.043 |

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| Fabaceae | | | | | | | |
| *Arachis hypogaea* L. | amendoim | Naturalized | Purgative. | It´s oil is recommended to be taken before the childbirth, for a purgative effect | | | |
| *Bauhinia forficata* Link | pata-de-vaca, pata-de-vaca-original | Native | Kidney and gallbladder stones, bladder problems, urinary tract infections and back pain. | Urinary system and vagina infection. | | | 26.086 |
| *Bauhinia variegata* L. | pata-de-vaca | exotic | Infections. | | | | 0 |
| *Erythrina crista-galli* L. | corticeira | Native | Toothache, oral cleaning and back pain. | | | | 0 |
| *Medicago sativa* L. | alfafa | Cultivated | Low blood pressure and AIDS. | Stimulate lactation. | | | |
| *Mimosa bimucronata* (DC.) Kuntze | maricá | Native | Bronchitis and toothache. | Uterine myoma. | | | 0 |
| *Parapiptadenia rigida* (Benth.) Brenan | angico | Native | Bronchitis and asthma; "for everything". | | | | 0 |
| *Phaseolus vulgaris* L. | feijão-branco | Cultivated | Slimming. | | | Edible seeds | 8.666 |
| *Senna corymbosa* (Lam.) H.S.Irwin & Barneby | sene, sena, sene-do-mato, fedegoso | Native | Laxative, colic, slimming, diarrhea and lung problems. | Abortive. | | Seeds used to make a kind of coffee | 17.391 |
| Geraniaceae | | | | | | | |
| *Pelargonium graveolens* L´Hér. | malva-cheirosa | Cultivated | Flu and as a diuretic. | | Baths for spiritual protection | | |
| Hypoxidaceae | | | | | | | |
| *Hypoxis decumbens* L. | cebolinha-do-campo | Native | Liver and respiratory problems. | | | | |
| Illiciaceae | | | | | | | |
| *Illicium verum* Hook.f. | anis-estrelado | Cultivated | Intestinal gas and to warm the body. | | | | |
| Iridaceae | | | | | | | |
| *Sisyrinchium vaginatum* Spreng. | cancha-larga, cabelo-de-porco | Native | High cholesterol, rheumatism, osteoporosis, kidney problems and bladder infections. | | | | |
| Juglandaceae | | | | | | | |
| *Carya illinoinensis* (Wangenh.) K. Koch | nogueira | Cultivated | Cholesterol, diabetes and slimming. | | | Edible seed | |

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| Juncaceae | | | | | | | |
| *Juncus capillaceus* Lam. | cabelo-de-porco, graminha | Native | Back pain, kidney problems, fever, diarrhea and slimming. | | | | 0 |
| Lamiaceae | | | | | | | |
| *Cantinoa mutabilis* (Rich.) Harley & J.F.B.Pastore | canela-de-negro | Native | Food congestion, digestive. | | | | |
| *Ocimum basilicum* L. | manjericão | Cultivated | Colic, heart problems and as a sedative. | | Baths for spiritual protection | Condiment | 26.086 |
| *Ocimum gratissimum* L. | canela-de-negro, anis, cravo-fêmea | Naturalized | Heart problems and for soothing. | Abortive. | | Condiment, aromatic tea | |
| *Ocimum carnosum* (Spreng.) Link & Otto ex Benth. | anis, anis-do-mato | Native | Flu, intestinal gas and to warm the body. | | | Condiment, aromatic tea | 0 |
| *Cunila microcephala* Benth. | poejo, poejinho | Native | Flu, cough, asthma, bronchitis and as an expectorant. | Flu, cough, bronchitis, asthma and to keep babies' and children's body warm. | | | 86.956 |
| *Lavandula angustifolia* Mill. | alfazema | Cultivated | To unclog nose. | | Baths for spiritual protection | | 0 |
| *Mentha arvensis* L. | hortelã, hortelã-preta | exotica | Flu, worms and colic. | Worms and colic in babies. | | Condiment, aromatic tea | 13.043 |
| *Mentha* sp. | alevante | | Flu. | Flu in children | | Condiment, aromatic tea | |
| *Mentha* sp. 1 | hortelã | | Worms, cough and abdominal pain | Worms, soothing and children's abdominal pain. | | Condiment, aromatic tea | 21.739 |
| *Mentha* sp.2 | hortelã-branca | | Flu and worms. | Worms in children. | | Condiment, aromatic tea | 13.043 |
| *Origanum majorana* L. | manjerona | Cultivated | Migraine, headache, stomach problems, colic, diarrhea, flu, cough, bronchitis, earache and as an expectorant. | Emmenagogue, to detach the placenta, induce cervical dilatation during childbirth, contraceptive, abortive, heal the newborn's navel, soothing, colic, flu and diarrhea in | | Condiment | 30.434 |

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| | | | | children and to keep babies' and children's body warm. | | | |
| *Plectranthus barbatus* Andr. | boldo, boldão, boldo-brasileiro, boldo-de-árvore | Cultivated | Stomach, gallbladder and liver problems, colic, nausea, hangover, high cholesterol and slimming. | | | | 91.3 |
| *Plectranthus ornatus* Codd | boldo-rasteiro, boldo, boldo-do-chile, boldo-miúdo | Cultivated | Stomach pain, vomits and slimming. | | | | 17.391 |
| *Rosmarinus officinalis* L. | alecrim | Cultivated | Pain relief, rheumatism, toothache, headache, swollen throat and heart problems. | Abortive. | Baths for spiritual protection and remove bad fluids | Condiment | 30.434 |
| *Salvia microphylla* Kunth. | ponta-alívio, pronto-alívio, ponta-livre | Cultivated | Pneumonia, sedative, pain relief; "for everything". | | | | 0 |
| *Salvia officinalis* L. | sálvia, sábia | Cultivated | Liver problems and to increase appetite. | | | Condiment | 0 |
| *Vitex megapotamica* (Spreng.) Moldenke | tarumã | Native | Blood cleansing. | | | | |
| Lauraceae | | | | | | | |
| *Cinnamomum verum* J.Presl | canela | Cultivated | Vomits, bronchitis, cold, cough, whooping cough, anemia, cancer and to warm the body. | Abortive, menstrual cramps, to regulate menstrual periods, to induce cervical dilatation during childbirth and for postpartum depression. | | Condiment | 39.129 |
| *Laurus nobilis* L. | louro | Cultivated | | Abortive. | | Condiment | 21.739 |
| *Persea americana* Mill. | abacateiro, abacate | Naturalized | Bruises, rheumatism, pain relief, back and kidney problems, toothache and swollen throat. | | | Edible fruit | 21.739 |
| Linaceae | | | | | | | |
| *Linum usitatissimum* L. | linhaça | Exotic | Constipation and brain fortifying. | Constipation in children. | | Edible seed | 8.666 |
| Loranthaceae | | | | | | | |
| *Tripodanthus acutifolius* (Ruiz & Pav.) Tiegh. | erva-de-passsarinho | Native | Pneumonia, joint and tendon pain. | | | | |

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| Lythraceae | | | | | | | |
| *Cuphea carthagenensis* (Jacq.) J.F. Macbr. | sete-sangrias | Native | Stomach problems, blood cleansing and high blood pressure. | | | | 0 |
| *Heimia apetala* (Spreng.) S.A.Graham & Gandhi | erva-da-vida, murta | Native | Intestinal infection, high cholesterol, spleen problems and kidney and gallbladder stones. | Intestinal infection in children. | | | 0 |
| *Punica granatum* L. | romã | Cultivated | Diarrhea, stomachache and throat infections. | | | Edible fruit | 39.129 |
| Malvaceae | | | | | | | |
| *Luehea divaricata* Mart. | açoita-cavalo | Native | Flu, cough, bronchitis and asthma. | Breast cancer. | | | 8.666 |
| *Malva parviflora* L. | malva | Naturalized | Throat and teeth infection, mouth ulcer, inflammation, infections, wounds and sinusitis. | Ovaries infections. | | | 47.826 |
| *Sida rhombifolia* L. | guanxuma, guanxuma-branca, guanxuma | Native | Eyes and intestines infection, diarrhea, sores, high blood pressure, dandruff, seborrhea in the eyebrow and anemia. | | Broom for evil eye | | 8.685 |
| *Whalteria* sp. | douradinha-do-campo | Native | Urinary tract infections. | | | | |
| Melastomataceae | | | | | | | |
| *Leandra australis* (Cham.) Cogn. | pixirica | Native | Diarrhea and hemorrhoids. | | | | |
| *Leandra* sp. | pixirica, uva-ursa, manacá-da-serra | Native | Diarrhea, gastritis and hemorrhoids. | | | Edible fruit | |
| *Miconia hyemalis* A.St.-Hil. & Naudin | pixirica-branca | Native | Diarrhea and hemorrhoids. | | | | |
| Meliaceae | | | | | | | |
| *Melia azedarach* Linn. | cinamomo, cinamão | Naturalized | Wounds, skin rashes, mycosis, scabies, allergies, pain, rheumatism, toothache, swollen throat, blood, sand flea, scabies, strangles, infection and as a head lice repellent. | Mycosis, scabies, allergies and skin rashes in children. | Evil eye, undo spells | | 21.739 |
| Moraceae | | | | | | | |
| *Ficus carica* L. | figo, figueira | Cultivated | Heart problems, high blood pressure, diarrhea and flu. | Flu in children | | edible fruit, aromatic leaves for tea | 0 |

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| *Morus nigra* Linn. | amora, amoreira, amora-preta-de-árvore | Cultivated | Diabetes, high cholesterol, appendicitis and as a diuretic. | Menopause hot flashes. | | Edible fruit | 0 |
| *Sorocea bonplandii* (Baill.) W.C.Burger et al. | cancorosa, cincho, espinheira-santa-de-sete-espinhos | Native | Blood cleansing, heartburn, ulcer and flu. | | | | 0 |
| Musaceae | | | | | | | |
| *Musa paradisiaca* L. | bananeira, banana | Cultivated | Bronchitis, cough, whooping cough, varicose veins, sores, infection, heart problems and worms. | | | Edible fruit | 13.043 |
| Myristicaceae | | | | | | | |
| *Myristica fragrans* Houtt. | noz-moscada | Exotic | Pneumonia vomits and anemia. | Vomiting and nausea during pregnancy, postpartum depression, emmenagogue and abortive. | | | 0 |
| Myrtaceae | | | | | | | |
| *Blepharocalyx salicifolius* (Kunth) O.Berg | murta | Native | Stomach and liver problems. | | | | 0 |
| *Campomanesia aurea* Berg | carovinha-do-campo, gauvirova-do-campo | Native | High cholesterol, atherosclerosis, "fatty heart" and inflammations. | | | Edible fruit | |
| *Campomanesia xanthocarpa* O. Berg | guabiroba, guavirova | Native | Colic, diarrhea, diabetes, high cholesterol and glucose levels and slimming. | | | Edible fruit | 8.666 |
| *Eucalyptus citriodora* Hook. | eucalipto-cidró, eucalipto-cheiroso, eucalipto-cidra | Exotic | Sinusitis, bronchitis, flu, as an expectorant and to brighten the hair. | | Smoke for bad spirits and to bring money and good luck | | 30.434 |
| *Eucalyptus* sp. | eucalipto | Exotic | Asthma, dilated bronchi, catarrh and flu. | | | | 39.129 |
| *Eugenia uniflora* Linn. | pitanga, pitangueira | Native | Diarrhea, belly ache, heartburn, intestinal infection and pneumonia. | Heartburn during pregnancy. | Bath to get a job | Edible fruit | 100 |
| *Myrciaria cuspidata* O.Berg | camboim, angico-branco | Native | Asthma, bronchitis, cough, rheumatism, problems and pain in the bones. | | | | |
| *Myrciaria delicatula* (DC.) O.Berg | camboim | Native | Bone problems, rheumatism and pain relief. | | | | |

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| *Plinia peruviana* (Poir.) Govaerts | jabuticaba | Native | Diarrhea. | | | Edible fruit | |
| *Psidium cattleyanum* Sabine | araçá | Native | Diarrhea, belly ache, colitis and inflammation. | Ovaries infections. | | Edible fruit | 21.739 |
| *Psidium guajava* L. | goiaba, goiabeira | Naturalized | Belly ache and diarrhea. | | | Edible fruit | 78.2 |
| *Syzygium aromaticum* (L.) Merril. & Perry | cravo | Exotic | Anemia and cough. | Postpartum depression, emmenagogue, abortive. | | Condiment | 13.043 |
| *Syzygium cumini* (L.) Skeels | jambolão | Naturalized | Diabetes and high blood pressure. | | | | 8.666 |
| Nyctaginaceae | | | | | | | |
| *Boerhavia diffusa* L. | erva-tostão | Naturalized | Diarrhea and intestines infections. | Constipation in children. | | | |
| *Mirabilis jalapa* L. | sempre-viva | Naturalized | Eye infections. | | | | |
| Oleaceae | | | | | | | |
| *Olea europaea* L. | azeitona | Exotic | | Nausea during pregnancy. | | Edible fruit | |
| Passifloraceae | | | | | | | |
| *Passiflora alata* Curtis | maracujá | Native | For soothing, stress relief and high blood pressure. | | | | |
| *Passiflora edulis* Sims | maracujá | Native | For soothing and fortifying. | For soothing and as fortifying for children. | | Edible fruit | 12.975 |
| *Passiflora elegans* Mast. | cipó-pau-ferro | Native | Diabetes. | | | | |
| Phyllanthaceae | | | | | | | |
| *Phyllanthus niruri* L. | quebra-pedra, quebra-pedras-de-árvore | Native | Kidney and bladder problems. | | | | 21.739 |
| *Phyllanthus tenellus* Roxb. | quebra-pedra | Native | Kidney stones. | | | | 17.391 |
| Phytolaccaceae | | | | | | | |
| *Petiveria alliacea* L. | guiné | Naturalized | Rheumatism, headache and migraine. | Baths for spiritual protection in children. | Baths for spiritual protection, evil eye | | 21.739 |
| *Phytolacca dioica* L. | umbu | Native | Laxative. | | | | |
| Piperaceae | | | | | | | |
| *Piper mikanianum* (Kunth) Steud. | pariparoba-do-mato | Native | Depurative. | Abortive. | | | |

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|---|---|---|---|---|---|---|---|
| *Piper nigrum* L. | pimenta-do-reino | Exotic | Pain relief, rheumatism, toothache and swollen throat. | | | Condiment | |
| *Piper regnellii* (Miq.) C.DC | pariparoba, pariparoba-de-árvore, pariparoba-de-casa | Native | Depurative, inflammations, bladder problems, infections, rheumatism, wounds and bruises; "for everything". | Late period, abortive. | | | 13.043 |
| Plantaginaceae | | | | | | | |
| *Plantago* cf. *australis* Lam. | tansagem, transagem, tranchaz | Native | Antibiotic. Urinary problems, throat and ear infections, wounds, stomachache, back pain, diarrhea, lung and liver problems; "for everything". | Urinary and vaginal infection, female problems. | | | 56.468 |
| *Plantago major* L. | tansagem-de-casa | Naturalized | Infections. | | | | |
| Poaceae | | | | | | | |
| *Aristida condylifolia* Caro | cabelo-de-porco | Native | Slimming and fevers. | To reduce menstrual flow, ovaries inflammations. | | | |
| *Zea mays* Linn. | milho | Cultivated | Kidney problems, fever, urinary tract infection and as a diuretic. | | | Edible seeds | 8.666 |
| *Chusquea tenella* Nees | cana-do-brejo | Native | Kidney problems. | | | | |
| *Cymbopogon citratus* (DC.) Stapf. | capim-cidreira, capim-cidró, erva-cidreira, capim-santo, cidreira, cidró | Naturalized | Soothing, high blood pressure, flu and cough. | Soothing for pregnant woman and babies. | | Aromatic tea | 34.782 |
| *Saccharum officinarum* L. | cana | Cultivated | To eliminate fat. | | | To make sugar | 0 |
| Polygonaceae | | | | | | | |
| *Muehlenbeckia sagittifolia (*Ortega) Meisn. | salssaparrilha | Native | Blood thinning and cleansing, allergies, scabies, bladder infection, depurative, varicose veins, circulation problems, hemorrhoids, skin spots and acne, as a diuretic and to eliminate alcohol from the body. | Blood infection, allergies and scabies in children. | | | 12.975 |
| *Rumex* cf. *obtusifolius* L. | língua-de-vaca | Naturalized | High cholesterol. | | | Edible leaves | 0 |
| *Polygonum punctatum* Elliott | erva-de-bicho | Native | Hemorrhoids, itching, scabies, mycosis, allergy, wounds, varicose veins, hemorrhoids, head lice, sand flea and skin cancer. | Abortive. | To undo spells | | 30.434 |

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|---|---|---|---|---|---|---|---|
| Rosaceae | | | | | | | |
| *Malus* x *domestica* Borkh. | maçã | Cultivated | Diarrhea. | | | Edible fruit | |
| *Prunus domestica* L. | ameixa-preta | Cultivated | Constipation. | Constipation in children. | | Edible fruit | |
| *Prunus persica* (L.) Batsch | pessegueiro | Cultivated | Head lice, scabies and sand flea. | | To undo spells | Edible fruit | |
| *Rubus rosifolius* Sm. var. *rosifolius* | amorinha-do-mato, amora, amora-do-campo, amora-do-mato, amora-branca, amora-miúda | Native | AIDS, appendicitis, diabetes, high cholesterol and hair loss. | Menopause and hot flashes. | | Edible fruit | 12.975 |
| Rubiaceae | | | | | | | |
| *Borreria verticillata* (L.) G. Mey. | poaia, cabeça-de-negro | Native | Diarrhoea, abdominal pain and intestinal infection. | Diarrhea, abdominal pain and intestinal infection in children. | | | 13.043 |
| *Coffea arabica* L. | café | Cultivated | Headache, insomnia, laxative, high blood pressure (leaf) and low blood pressure (coffee powder). | | | | 0 |
| Rutaceae | | | | | | | |
| *Citrus aurantiifolia* (Christm.) Swingle | lima | Cultivated | Soothing, stress, headache, abdominal pain and flu. | | | Edible fruit | 8.666 |
| *Citrus aurantium* L. | laranja-azeda | Cultivated | Diabetes, stress, insomnia, bronchitis and high blood pressure. | | | Edible fruit | |
| *Citrus reticulata* Blanco | vergamota, bergamota, bergamoteira, vergamoteira | Cultivated | Flu, headache, abdominal pain, fever and for soothing. | | | Edible fruit | 60.812 |
| *Citrus latifolia* Tanaka | limão-taiti | Cultivated | Flu and gastritis. | | | Edible fruit | 8.666 |
| *Citrus limon* (L.) Osbeck. | limão-bergamota, limão-vermelho, limão, limão-vergamota | Cultivated | Flu, blood thinning and cleansing, high blood pressure and for soothing. | | | Edible fruit | 43.478 |
| *Citrus sinensis* (L.) Osbeck | laranjeira, laranja-de-umbigo, laranja-do-céu | Cultivated | Flu, fever, soothing, healing skin, headache, abdominal pain, laxative, fainting, paralysis, to strengthen the mind, to increase disposition and to yellow fever (green fruit). | Newborn baby cold. | Baths for spiritual protection | Edible fruit | 56.521 |

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|---|---|---|---|---|---|---|---|
| *Zanthoxylum rhoifolium* Lam. | mamica-de-cadela | Native | Tendon inflammation, arthritis, osteoarthritis, rheumatism and toothache. | | | | |
| *Ruta graveolens* L. | arruda | Cultivated | | Dilatation at birth, emmenagogue, postpartum depression, abortive, newborn baby colic. | For blessing and baptizing, evil eye, bad fluids | | 43.477 |
| Salicaceae | | | | | | | |
| *Casearia sylvestris* Sw. | chá-de-bugre, erva-de-bugre, mata-cavalo, carvalinho | Native | High blood pressure, heart problems, blood thinning and cleansing, high cholesterol, slimming, rheumatism, initial cancer stage, wounds, body pain, uric acid, kidney stones and to avoid strokes. | | | | 13.043 |
| Santalaceae | | | | | | | |
| *Jodina rhombifolia* (Hook. & Arn.) Reissek | cancorosa-de-espinho, cancorosa-de-3-espinhos, cancorosa | Native | Osteoporosis, rheumatism, gastritis, blood cleansing, syphilis, prostate problems; "for everything". | | | | |
| *Phoradendron piperoides* (Kunth) Trel. | erva-de-passarinho | Native | Gastritis. | | | | 0 |
| Sapindaceae | | | | | | | |
| *Dodonaea viscosa* (Linn.) Jacq. | vassoura-vermelha | Native | Congestion, stomach and liver problems, to induce vomits and bot. | | | | |
| Solanaceae | | | | | | | |
| *Capsicum* sp. | pimenta | | | | Evil eye | Condiment | 0 |
| *Nicotiana tabacum* L. | fumo | Cultivated | Sand flea, scabies, animal bite and head lice. | | | | |
| *Solanum americanum* Mill. | | Native | "For everything". | | | | 0 |
| *Solanum lycopersicum* L. | tomate | Cultivated | | Nausea during pregnancy. | | Edible fruit | |
| *Solanum mauritianum* Scop. | fumo-bravo, fumeiro-brabo | Native | Healing skin, rheumatism, muscle pain and stomach problems. | Healing skin in cesarean surgery. | | | 8.666 |
| *Solanum paniculatum* L. | jurubeba, juazão | Native | Stomach, liver and gallbladder problems, vomits and wounds. | | | | 12.975 |
| *Solanum sisymbriifolium* Lam. | juá | Native | Constipation. | | | Edible fruit | 21.739 |
| *Solanum tuberosum* L. | batata-inglesa | Cultivated | Removes salt from the body and bones, gastritis and ulcer. | | | Edible tuber | |

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|---|---|---|---|---|---|---|---|
| Theaceae | | | | | | | |
| *Camellia sinensis* (L.) Kuntze | chá-preto | Exotic | Fever, to increase appetite and fortifying. | | | Leaves for tea | 0 |
| Tropaeolaceae | | | | | | | |
| *Tropaeolum majus* L. | | Naturalized | Legs and temples pains. | | Used in african-origin cults | | |
| Urticaceae | | | | | | | |
| *Cecropia pachystachya* Trécul | caixeta | Native | Diarrhea. | | | Edible fruits | |
| *Urera baccifera* (L.) Gaudich. ex Wedd. | urtigão | Native | Blood cleansing. | | | | |
| *Urtica circularis* (Hicken) Sorarú | urtiga, urtiga-miúda | Native | To urinate and muscle cramps. | To regulate menstruation. | | | 0 |
| Verbenaceae | | | | | | | |
| *Aloysia citrodora* Palau | cidró-de-árvore, cidró, cidrozinho | Cultivated | Flu, high blood pressure and as a sedative | Soothing for children and pregnant woman. | | | 30.434 |
| *Aloysia gratissima* (Gillies & Hook.) Tronc. | cidró-do-mato, erva-santa, erva-da-pontada, ponto-alívio | Native | Cold, cough, pneumonia, stomach problems, gastritis and soothing; "for everything". | Children with flu, pneumonia in pregnant woman. | | | 21.739 |
| *Lantana camara* L. | malva-cheirosa | Naturalized | | | Baths for spiritual protection | | 13.043 |
| *Lippia alba* (Mill.) N.E.Br. ex Britton & P.Wilson | melissa-de-árvore, sálvia, sálvia-da-gripe, erva-santa-maria, falsa-melissa | Native | Insomnia, hysteria, flu, cough, worms, gas, mumps, to warm the body and for soothing. | Flu in children | | | 34.782 |
| *Stachytarpheta cayennensis* (Rich.) Vahl | gervão, guiné | Native | Flu, cough, asthma, bronchitis, respiratory diseases, rhinitis, to warm the body, blood cleansing, toothache, kidney and prostate problems, inflammations and as a diuretic | | Spiritual protection | Aromatic tea | 21.739 |
| *Verbena montevidensis* Spreng. | fel-da-terra, gervão, zé-da-silva | Native | Liver problems (spilling of bile), stomachache and abdominal pain. | | | | |
| Violaceae | | | | | | | |
| *Viola odorata* L. | violeta | Cultivated | Allergies. | | | | 0 |

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|---|---|---|---|---|---|---|---|
| Zingiberaceae | | | | | | | |
| *Alpinia zerumbet* (Pers.) B.L. Burtt. & R.M. Sm. | cardamão, cardamomo, gengibre, velame | Cultivated | Stomach problems, diabetes, racing heart, high blood pressure, clogged veins, pneumonia, toothache and headache. | | | | 0 |
| *Zingiber officinale* Roscoe | gengibre | Cultivated | Flu, bronchitis, liver and throat problems, slimming, high cholesterol, as a condiment and as a digestive | | | Condiment | 13.043 |

The conflict between modern and traditional medicine emerged in the speeches of the interviewees, especially in the healers' reports, who had their practices questioned at different times in their life trajectories. The midwife, for example, stopped offering her services as the public health system expanded obstetric care. When her traditional practice coexisted with institutionalized obstetrics, doctors speculated on her work, making visits, and asking her questions. This kind of relationship, however, did not intend to recognize the legitimacy of her craft being marked by the conflict between different views and medical practices. By placing herself as someone who helps the baby to be born and highlighting the importance of not causing pain and suffering to the mother, the midwife distinguishes her practice:

> "...then I asked him like this: Doctor, what do you do in the hospital when the child stops during the labor, neither forwards nor backwards? [We cut the woman]. And I said this: when the child points his head and stops, I say, we have to help, we grease the hand, push the woman's vagina back and with this hand here we pull the child forward, there's no need cutting. I was already born a child weighing 5 kilos and 100 grams, and I did not cut..."

In the context of this study, the encounter between different medical traditions, intensified by urbanization, stimulated community members to adopt different and complementary health care strategies, which involve the treatments of modern and traditional medicine, visiting healers, religious practice, diets, fasts, self-medication, among others. However, in the context of this research and the university extension projects developed in the community, the public health services proved to be poorly permeable and open to dialogue with healers and traditional medicines knowledge (Casagrande et al 2013). This resistance on the part of the biomedical system tends to eliminate the necessary conditions for producing traditional knowledge, such as those linked to the midwife's and herbalist's craft.

**Uses, categorizations and ways of obtaining medicinal plants**

The ethnobotanical survey identified 237 species of medicinal plants (Table 1). Among these, species used exclusively for spiritual protection and some food uses were considered. Zone 6 interviewees cited 157 species, while experts reported using 215 species. Eighty species were cited exclusively by the healers (44 were native), while 22 plants represented specific knowledge of the zone 6 residents. Among the specialists, the average number of species cited was 113.5, while for the residents of zone 6, the average number of species mentioned was 34.25.

Plants were obtained from various sources through cultivation, purchase, harvesting in natural environments and exchanges between relatives and neighbors (Fig. 4). Most native and naturalized species were harvested in forests, grasslands, backyards, gardens, and vacant lots. Most of the cultivated plants were exotic. Few species were usually purchased, generally exotic, such as **camomila (***Matricaria recutita* L) and **erva-doce (***Pimpinella anisum* L.). Growing plants for spiritual protection, such as **espada-de-são-jorge** (*Sansevieria trifasciata* Hort ex Paine "Laurentii") and **comigo-ninguém-pode** (*Dieffenbachia picta* Schott), is widespread. The interviews mentioned the disappearance of specific medicinal species, such as **arnica** (*Stenachaenium campestre* Baker), and the cultivation practices decrease, which is perceived as consequence of urbanization and traditional medicine devaluation. In this sense, native forest and grassland conservation is essential to guarantee access to medicinal herbs and enhance traditional knowledge in cities.

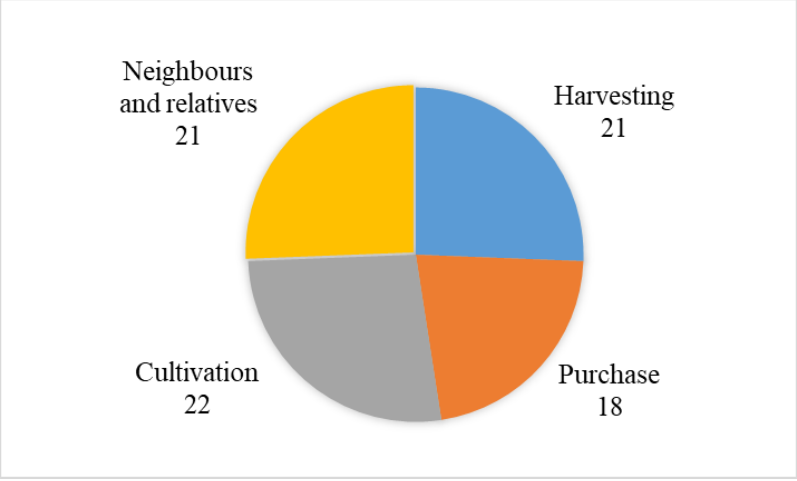


Figure 4. Number of citations according to the way of obtaining the plants.

The Brazilian native species represented 50.2% of the species (119), followed by exotic plants (47.3%), which include cultivated plants (27.4%, 65 species), naturalized plants (15.6%, 37 species), and others for which was not possible to determine whether they were naturalized or cultivated in Brazil (4.2%, 10 species). In Table 1 these ten species were mentioned as exotic. For six species identified at the genus level, it was not possible to determine the origin. The research registered species belonging to 75 botanical families. The family with the highest number of representatives was Asteraceae (38), followed by Lamiaceae (17), Myrtaceae (13), Fabaceae (9), Solanaceae (8) and Rutaceae (8). These data agree with other studies realized in southern Brazil, such as Garlet (2000), Kubo (1997) and Vendruscolo (2004). Following the scientific classification, the distinction between native, exotic, cultivated and naturalized species in ethnobotanical studies helps in understanding the ancestral relationships of communities with the original flora, the dynamics of incorporation of plants and knowledge from different places, and the planning of environmental conservation strategies.

Although the native scientific botanical category corresponds, to some extent, to local categorizations as "native bush" or "grassland", partially preserved areas in their original attributes, some interlocutors perceive a continuity, not a polarization, between native and cultivated environments and species. The midwife, for example, when asked about the origin of plants, said that “every plant is from the bush. We bring it and plant it at home”. It establishes a continuum between the domestic and wild world of “the home" and "of the bush". Her therapeutic itinerary involves incursions into forest areas for the harvesting of medicinal plants, which will be used in treatments and cultivated at home. Her traditional medical practice is based on the non-polarization between what is technically considered native, understood as autochthonous or wild, and what is considered exotic and/or domestic, as products of human cultural action. Therefore, it reveals the practical wisdom of those who continue the millenary work that enabled humanity to recognize and domesticate varieties of food and medicinal plants and vegetable fibers. When brought from the "bush" to the domestic environment, the plants will be cared for, as well as the people who need them. So, a network of therapeutic relationships involving plant and humans is established in a territory, which hybridizes domestic and wild spaces.

Different local plant categorizations were observed regarding the purpose, use, and people for whom the plants were prescribed. Related to ritualistic or religious importance, "religion herbs", "herbs for baths", and "saint herbs" (28 species, 12%) were always associated with African origin people cultural manifestations. According to the interviewees, the herbs were prescribed "for children" (34 species, 14%) and "for women" (57 species, 24% ). A generally broader category is "tea herbs", or simply "teas", which comprises many plants used for different health problems. In addition, food importance was mentioned for 84 species (35%), repellent use for seven species (3%) and cosmetic use (hair and skin) for six species (2,5%). Sixty-two per cent of the species (147) belong to at least two of the mentioned groups. See Table 1.

**Plants for women's and children's health**

The "woman" and "children" herbs constitute a group of plants whose domain of knowledge and use is attributed mainly to the female universe. Eighty-one identified species were used for children's and women's health treatments, confirming the relevance of these plants in the community.

According to local knowledge, these plants were divided into some subgroups: emmenagogue and abortifacient plants, also classified as unsuitable for pregnant women; contraceptive plants; plants allowed for pregnant women, which were usually the same plants that can be given orally to babies and young children; plants for children's health problems; plants for treating genitourinary tract problems such as infections, menstrual cramps, uterine myoma and ovary problems; plants for breast health; plants for treating menopausal symptoms; plants for unwanted symptoms in pregnancy; galactagogue plants; plants for childbirth and the puerperium, among other subgroups. These plants and uses were listed in Table 1.

**Ritual plants**

This research identified 24 species used to prevent and treat spiritual disorders which also manifest physical symptoms. Locally they were called "saint herbs", "bath herbs", "protection herbs" or "religion herbs". Cultivation, baths, blessings, smoking and making amulets (patuás) and brooms were usual practices for the spiritual protection and cleansing. **Espada-de-são-jorge** (*Sansevieria trifasciata* Prain) and **comigo-ninguém-pode** (*Dieffenbachia seguine* (Jacq.) Schott) were examples of plants abundantly cultivated for these purposes and which were among the species with the most significant concordance of medicinal uses (CUPc), as highlighted in Table 1. These species and others mentioned in the study were used in African origin people cultural manifestations throughout Brazil.

Specifics about its ritualistic and religious use can be verified in Camargo (1988), Carrión (2009), Alves *et al.* (2019), Pagnocca *et al.* (2020), Barboza *et al.* (2021) and Ferreira *et al.* (2021).

Although this study does not aim to characterize the ritualistic and religious use of plants, it can be said that these species were recognized and managed for their sacred, ritual, and medicinal value by African-origin cultural manifestations Umbanda, Nação (Batuque) and Quimbanda, which were present in the territory of *Morro da Cruz*. Therefore, they were cultivated, or grow, in different environments such as the backyards, native forests and grasslands, vacant lots, fences and edges of streets and water courses. The dissemination of plants and associated knowledge favors a daily engagement, which creates the sacred dimension of the community territory and reveals an environment of intercultural learning and practice mediated by African-origin cosmovisions, even when few interlocutors declare themselves practitioners of these manifestations or composing the category African origin people.

Regarding plants associated with religious practices, it is worth reporting the case of **marcela** (*Achyrocline satureioides* (Lam.) DC.), one of the species with the highest values of relative importance in this study. Its harvest is performed on the Good Friday Catholic holiday, before dawn, when the plant expresses the maximum of its medicinal and sacred properties. Every year on that day, Morro da Cruz is the stage for a procession that re-enacts the crucifixion of Jesus Christ, attracting thousands of people.

**Use diversity and concordance**

The most significant medicinal plant use indications referred to the digestive system, followed by the respiratory system, blood and immune system, genitourinary system, skin lesions, endocrine system and problems related to metabolism and nutrition. The predominance of uses associated with the digestive and respiratory system was also observed in other ethnobotanical surveys, such as in Kubo (1997) and Vendruscolo (2004), carried out in Rio Grande do Sul state and Amorozo (2002) and Pinto *et al.* (2006) carried out in Mato Grosso and Bahia, respectively. According to health professionals, problems related to the digestive system during the summer, and associated with the respiratory system during the winter, were frequent. The presence of households without access to the public water supply and sewage treatment imposes a precarious situation, which intensifies the incidence of health problems in the community, requiring the improvement of basic urban infrastructure.

Although many therapeutic indications mentioned by the interlocutors find correspondence in treating symptoms and diseases associated with specific biological systems, local perceptions reveal that using plants follows an integral concept of the body and the disease. Infections, headaches, inflammations, fevers, intoxications, and hemorrhages, for example, can compromise different systems and be associated with other causes. Fourteen species, among them **angico** (*Parapiptadenia rigida* (Benth.) Brenan), **marcela** (*Achyrocline satureioides* (Lam.) DC.), **cipó-mil-homens** (*Aristolochia triangularis* Cham.), **tansagem** (*Plantago cf. australis* Lam.), **ipê-roxo** (*Handroanthus heptaphyllus* (Vell.) Mattos*)* and **tajujá** *(Cayaponia martiana* (Cogn.) Cogn.) can be used "for everything", which means that they were used to treat various health problems, including preventive treatments for diseases. It is also worth noting that most plants mentioned have several applications and were combined in recipes. In this way, it is understood that collective and traditional experimentation selects specific and desirable synergistic effects achieved with the combined use of plants.

The index used to calculate the relative importance of species and prepared according to the number of respondents who cited them and the agreement of mentioned medicinal uses (CUPc) defines a set of species important to the community. The 16 species with the highest CUPc are: **pitanga** (*Eugenia uniflora* Linn.), **boldão** (*Plectranthus barbatus* Andrews), **poejo** (*Cunila microcephala* Benth.), **goiaba** (*Psidium guajava* Linn.), **quebra-pedras-rasteiro** (*Euphorbia prostrata* Aiton), **camomila**, (*Matricaria recutita* L), **guaco** (*Mikania laevigata* Sch. Bip. ex Baker), **marcela** (*Achyrocline satureioides* (Lam.) DC.), **espada-de-são-jorge** (*Sansevieria trifasciata* Prain), **babosa** (*Aloe arborescens* Mill.), **vergamota** (*Citrus reticulata* Blanco), **funcho** (*Foeniculum vulgare* Mill.), **tansagem** (*Plantago cf australis* Lam.), **comigo-ninguém-pode** (*Dieffenbachia picta* Schott) and **malva** (*Malva parviflora* Linn.). The importance values obtained for these species were greater than 45, and their respective uses were shown in Table 1. These data agree with other studies carried out in southern Brazil (Kubo 1997, Vendruscolo 2004).

**Discussion on the factors that influence the ethnobotanical knowledge production in urban areas**

This study identified a high species diversity that origins and grows in different environments. These results can be associated with those found in the Atlantic Forest of the Bahia state, where most medicinal plants were harvested

and cultivated in managed environments, as it occurs in rural communities (Voeks 1996). The author emphasizes the relevance of the managed environments for tropical pharmacopoeias and argues that the dynamics of the human relationships with plants correspond to changes in subsistence strategies, ecological processes, and diseases in different contexts. Regarding this study, the botanical diversity (taxa and origins of plants) is related to the community's sociocultural diversity, reflecting a process of historic botanical-cultural exchanges, and generating links with the territory. In this process, it is essential to recognize the relevance of native species, which corresponds to more than 50% of the plants mentioned.

Likewise, the results were related to evidence that considers migratory and immigration processes towards urban areas as catalysts to produce ethnobotanical knowledge necessary for the territorialization processes of these groups, questioning the narrative of "loss of knowledge". Vandebroek and Balick (2012) found that Dominican immigrants residing in New York mentioned the use of medicinal and food plants more frequently than their fellow citizens living in urban and rural areas of their origin country, regardless of the informant's age. A similar study among urban Vietnamese living in Vietnam and Hawaii found that immigrants reported more food uses for plants than their counterparts (Nguyen 2003). Hurrell *et al.* (2015) demonstrate the contribution of Bolivian and Chinese immigrants in the incorporation of the consumption of medicinal plants typical of their cultures commercialized in Buenos Aires, which increased the local biocultural diversity. Emperaire and Eloy (2008) found the ability of indigenous communities to recreate their agricultural practices in Amazon peri-urban environments, where they maintain high agricultural diversity and link production to land struggle strategies.

Furthermore, we consider that demographic concentration can play a catalytic role in cultural exchanges. When natural environments and agricultural practices were conserved, despite population growth and spatial transformations, ethnobotanical knowledge can find conditions to reinvent itself, meeting emerging demands and new historical vicissitudes. At this point, it is worth considering that health treatment autonomy provided by medicinal plants plays a vital strategy in the economic maintenance of low-income families in many urban communities. In addition, stimulating the learning of younger people beyond the domestic space, involving, and promoting community organizations and schools, is essential for the continuity of practices in traditional medicine. Finally, it is worth mentioning that the healers involved in the study know and use a vast repertoire of medicinal plants to treat their patients, friends, family members and neighbors. This knowledge integrates religious and spiritual practices and dialogue with scientific knowledge through access to scientific dissemination literature and courses taught by biomedical professionals. Therefore, ethnobotanical knowledge enhancement involves understanding and legitimizing these inclusive practices, which innovate through contact with different medical systems and expertise.

## Conclusions

The study's results affirm that urban communities, such as *Morro da Cruz*, can recognize and use a vital diversity of species to treat and prevent various symptoms and conditions. The local plant and use categorizations reflect the construction of territoriality and belonging and the challenges faced in urban areas to maintain health. Health, in turn, is conceived from an integral point of view by recognizing the interdependence between physical, emotional, and spiritual well-being.

Although learning about plants is closely associated with the family environment and vertical knowledge transmission, other learning forms and spaces can be better studied and encouraged. Women's groups, community associations, religious communities and kinship and neighborhood relationships constitute spaces for socialization and knowledge production that could be considered in future studies focused on therapeutic networks (Hellmam 2003) in which the public health systems constitute one among other health care options. New studies can also survey the role of media, literature, and scientific knowledge. In this regard, it is worth considering that exchanges between traditional and scientific knowledge seem to occur much more because of popular initiative than of the modern medical institution’s interest.

The narrative that presupposes the inevitable "loss of traditional knowledge" in cities does not favor the understanding of the dynamics of ethnobotanical knowledge production in multicultural and environmental diverse urban contexts. Therefore, it is crucial to recognize the dynamism and adaptability of traditional knowledge, as well as the territorial diversity of the urban environment. This recognition implies that popular knowledge about plants is not evenly distributed in different communities and neighborhoods of the same city. This hypothesis could be raised in further studies. However, historical conflicts between traditional and modern medicine, increasingly accessible in urban areas, and the persistent hygienism of urban occupation policies contributed to the delegitimization and extinction of traditional practices, such as popular midwives’ and herbalists’ craft. In this sense, public policies for protecting traditional crafts and knowledge in cities must be built together with society, with

women, healers and younger as priority partners, due to their essential role in producing and transmitting this knowledge.
In the same way, these public policies must involve actions for the conservation of remnants of native vegetation, biodiversity, and the stimulation of urban agriculture, which were fundamental for the vitality of traditional medicines and ties with the territory. The importance of collection and cultivation demonstrated these spaces' role in the local community's supply of plants.

Ethnobotany in urban environments is a strategic tool for popular sovereignty and health promotion. Recognizing the categorizations, perceptions and dynamics of knowledge production sites has the potential to support collective resistance movements in favor of environmental and cultural protection in which the dialogue between traditional and scientific knowledge gains central expression. In this sense, the intermedicality approach presents relevant contributions to the development of the ethnobotanical science, especially in studies carried out in urban areas.

## Declarations

**List of abbreviations:** not applicable
**Ethics approval and consent to participate**: This study was evaluated and approved by the Federal University of Rio Grande do Sul Research Ethics Committee (CEP/UFRGS-nº 2007958). All the participants provided prior informed consent before the interviews.
**Consent for publication**: Not applicable.
**Availability of data and materials**: Data is available from the first author.
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**Author contributions:** Alana Casagrande: collected, arranged, and analyzed the data, identified species, and wrote the original draft. Mara Rejane Ritter: Arranged and analyzed the data, identified species, and revised the manuscript. Rumi Kubo: analyzed the data, identified species, and revised the manuscript. All authors read and approved the final manuscript.

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