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Medicinal plants used by Itamaraty community nearby Anápolis, Goiás State, Brazil

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ABSTRACT. The use of plants for therapeutic purposes has been reported from ancient in Iran, India and China, especially. Recently, the use of *in-natura* plants as herbal medicines has grown in a systematic and increasing way, especially when combined with conventional therapy. In Brazil, the knowledge on the use of medicinal plants has been and is primarily derived from the indigenous, with African and European influences, and several studies have been done in order to verify which plants have been used for medicinal purposes by the Brazilian population in several communities from the "cerrado" region. This work performed a survey with the population of Itamaraty nearby Anápolis, Goiás State, Brazil with ethnobotanical focus in order to recover and preserve the ethnobotanical knowledge of this region. In general terms, the use of medicinal plants in this neighborhood follows the cultural aspects reported by other authors on the need for use of alternative therapies for poor communities, beyond the general and common use of leaves and infusions as the main form of preparation, since Asteraceae and Lamiaceae families are the most cited to use as medicinal plants.

Key words: ethnobotany, etnopharmacology, medicinal plants, Brazilian Savanna.

RESUMO. Plantas medicinais usadas pela comunidade do bairro Itamaraty em Anápolis, Estado de Goiás, Brasil. O uso de plantas para fins terapêuticos tem sido relatado desde a antiguidade, principalmente no Irã, Índia e China. Recentemente, o uso "in-natura" das plantas para fins medicinais foi retomado de modo sistemático e crescente, especialmente quando combinado com a terapia convencional. No Brasil, o conhecimento sobre o uso de plantas medicinais foi e é derivado principalmente das influências indígenas, primeiramente, mas também de negros e europeus, e diversos estudos têm sido feito no sentido de verificar quais as plantas utilizadas para fins medicinais pela população brasileira em várias comunidades do cerrado. Neste trabalho foi feita uma pesquisa com a população do bairro Itamaraty, em Anápolis, Estado de Goiás, Brasil, com enfoque etnobotânico, a fim de recuperar e preservar o conhecimento etnobotânico da região. Em termos gerais, o uso de plantas medicinais neste bairro segue os aspectos culturais relatado por outros autores sobre a necessidade de uso de terapias alternativas para as comunidades pobres, além do uso geral e comum de folhas e a infusão como a principal forma de preparação dessas plantas, tendo em vista que as famílias Asteraceae e Lamiaceae são as mais citadas para o uso como plantas medicinais.

Palavras-chave: etnobotânica, etnofarmacologia, plantas medicinais, cerrado.

Introduction

The use of plants for therapeutic purposes has been reported from ancient in Iran, India and especially in China (FRANÇA et al., 2008; REZENDE; COCCO, 2002; VALE, 2002).

Recently, the use of *in natura* plants as herbal medicines has grown in a systematic and increasing way, especially when combined with conventional therapy (EISENBERG et al., 1993). In Brazil, the knowledge on the use of medicinal plants has been and is primarily derived from the indigenous (GARLET; IRGANG, 2001; GRYNBERG et al., 2002; REZENDE; COCCO, 2002; RODRIGUES; CARLINI, 2003), with African and European influences (GARLET; IRGANG, 2001; GRYNBERG et al., 2002), and several studies have been done in order to verify which plants have been used for medicinal purposes by the Brazilian population in several communities from the Brazilian Savanna region. (ALVES et al., 2008; PASA et al., 2005; ALBUQUERQUE; HANAZAKI, 2006; VENDRUSCOLO; MENTZ, 2006; SOUZA; FELFILI, 2006; VILA VERDE et al., 2006;

RODRIGUES; CARVALHO, 2001), with some data on plants that have antifungal effects (FENNER et al., 2006).

The flora of the Brazilian Savanna region is the most diversified on the planet (ALVES et al., 2008, PEREIRA et al., 2009; SOUZA; FELFILI, 2006; VENDRUSCOLO; MENTZ, 2006; VILA VERDE et al., 2006; GUARIM NETO; MORAIS, 2003), which has attracted the interest of national and international research communities for the study, conservation and rational use of natural resources of this ecosystem (SOUZA; FELFILI, 2006).

The trade of medicinal plants is mainly performed through salespeople or cultivated by people in their homes, and in some cases, this is the unique therapeutic resource that poor people have access, and much of this knowledge is transferred from generation to generation, especially by rural populations (PASA et al., 2005). In fact, according to Simões et al. (2003), only 20% of the population has access to traditional medicines and the remainder use alternative medicine based on traditional knowledge of plants medicine.

The knowledge on medicinal plants by populations which use is common (VENDRUSCOLO; MENTZ, 2006) must be restored, also due to the increasing urbanization (PASA et al., 2005; AMOROZO, 2002), as phytotherapy plays important roles in the formation of culture of some population in addition to its therapeutic value (VENDRUSCOLO; MENTZ, 2006). According to Pereira et al. (2009), the acquisition of knowledge on herbal medicines is a scientific response to empirical data obtained from these populations over the centuries.

Ethnobotanical and/or ethnopharmacological studies are important for the acquisition of data on medicinal plants, preservation of their ecosystems and search for natural substances with therapeutic action (ALBUQUERQUE; HANAZAKI, 2006), and these data have been used by nurses and other health professionals for the treatment of populations that depend on primary care services (REZENDE; COCCO, 2002; ALVES; SILVA, 2003; SILVA et al., 2006).

In Anápolis, state of Goiás, 48 kilometers away from Goiânia, the third largest city in the state with population of 325,544 inhabitants according to IBGE estimates for 2007, neighborhoods with strong rural influence as the community of Itamaraty can still be found, which has a typical Brazilian Savanna pasture near the residences (data obtained from Anápolis city hall).

This work performed a survey with the population of this district with ethnobotanical focus in order to recover and preserve the ethnobotanical knowledge of this region.

Material and methods

The study area is part of the surroundings of Anapolis, Goiás State (Figure 1), a community with 762 people, according to estimates, which accounts for 0.23% of the city population. It is 1017 m above sea level in a region away from the city center with an area of Brazilian Savanna vegetation and pastures surrounding the neighborhood, which coordinates are 16º 19'36" of latitude and 48º 57'10" longitude. The climate has two seasons, one hot and rainy and another cold and dry, with average annual temperature of 22ºC, with variations throughout the year of 5ºC. The data collection for the ethnobotanical survey of medicinal plants used by local population was held between March and June 2007, through structured interviews in the form of questionnaires consisting of open and closed questions addressing the socio-economic survey of the plants used by residents, their use, cultivation, preparation methods, and source information. Through their popular names and citations from the informants, the scientific name of each species cited was obtained based on queries of the *Missouri Botanical Garden* site (Council on Botanical and Horticultural Libraries, Missouri, USA).

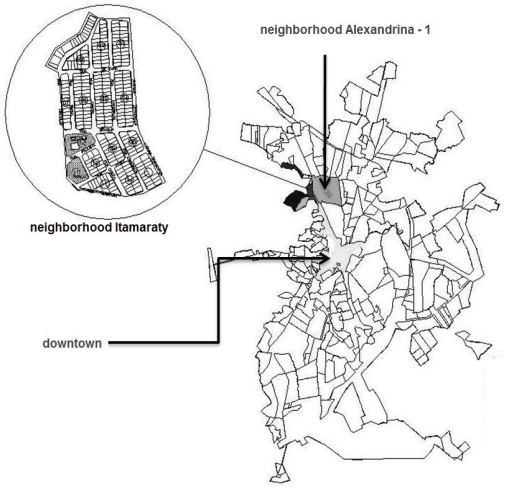

Figure 1. View of the study area in northern Anápolis, Goiás State (Source: Modified - Anápolis City hall - 2007).

One-hundred and two randomly selected were interviewed, with rigid standard for each house interviewed, for each home used in the interview, four were skipped, covering 13.4% of the local population. The interview was conducted in direct mode in order to prevent induction of responses.

The study followed the Ethics Research Committee by Resolution 196/96 on Research Involving Human Beings, and the ethical principles were in accordance with the Declaration of Helsinki (1964, revised in 1975, 1983, 1989, 1996 and 2000).

Results

Among the respondents, 33.3% were aged under 35 years and 66.6% above this age (Figure 2A), being 68.6% female and 31.4% male (Figure 2B).

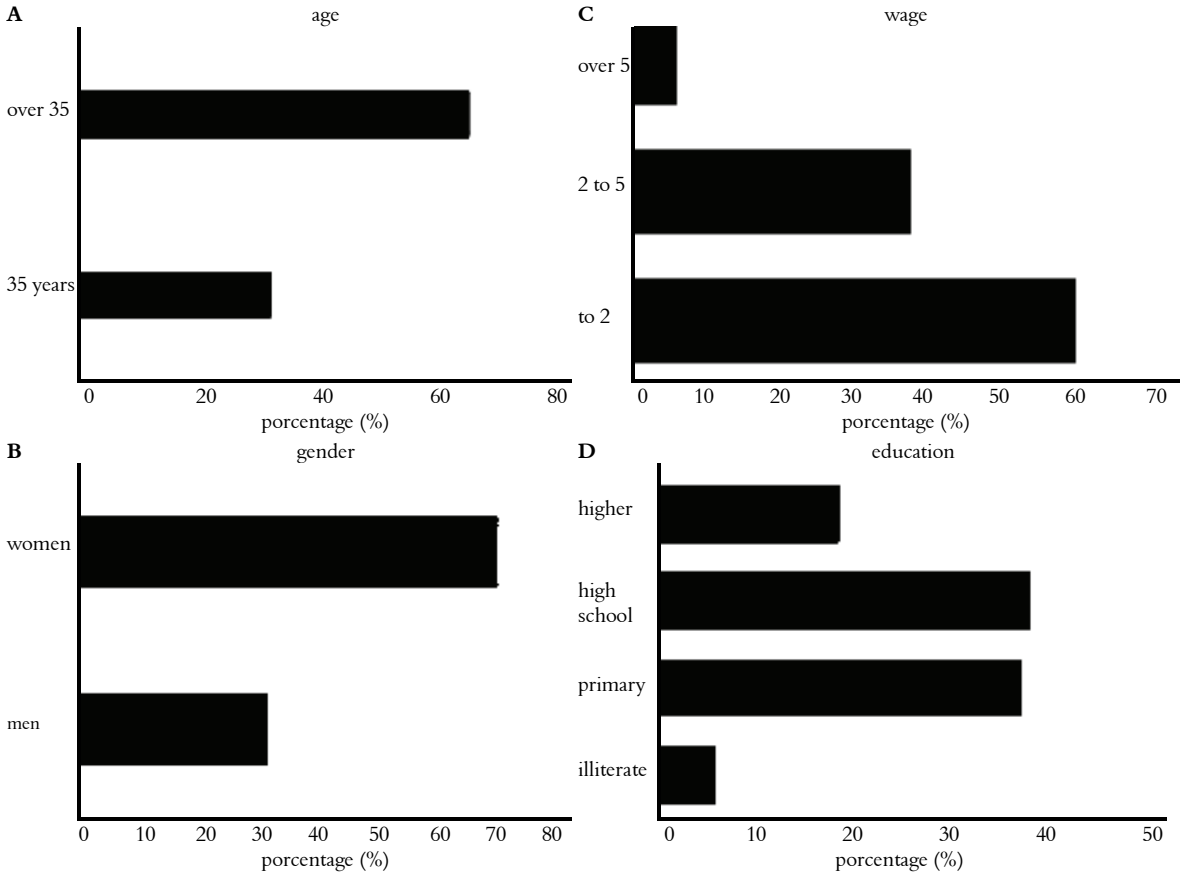

Figure 2. Graphic information on socio-cultural characteristics of the population from the district interviewed (Itamaraty neighborhood). (A) Age group of respondents, (B) gender of respondents, (C) family income in minimum wages, (D) educational level.

Approximately 56.8% reported monthly income up to 2 minimum wages (consider the minimum wage in Brazil approximately US$ 250,00), 36.2% from 2 to 5 minimum wages (Figure 2C). As for education level, 5.8% are illiterate, 37.2% had completed primary education, 38.2% attended high school and 18.6% attended higher education (Figure 2D).

The plants most used by the community were lemon grass, boldo, mint, rosemary and Santa Maria herb, and families most often cited were Asteraceae (11 species), Lamiaceae (6 species) and Fabaceae (4 species) (Table 1, Figure 5).

Respondents cited the following therapeutic activities: sedative (25%), release for intestinal diseases (22%), respiratory diseases (17%), healing effects (16%) and other beneficial actions on diseases such as diabetes, headaches and fever (20 %) (Figure 3C).

The most widely used plant parts cited by respondents were leaf (40.6%) root (16.8%), flower (14.5%), stems (14.5%), fruit (10%) and bulb (3.6%) (Figure 3B). The most frequent preparation methods were tea infusion (32%), maceration (19%), syrup, compress and gargle with 10% each item, bath (8%), washing and inhalation, both with 4% each, and tincture (3%) (Figure 3D).

Respondents reported using plants as dressing for preference to conventional therapy in 40% of respondents, 28% choose plants for not being harmful, or because they believe in the myth " not harmful for health", 23% for being more cheaper than other forms of healing and 9% for "not presenting adverse effects" (Figure 4D).

The knowledge about the plants and their use have been transmitted by mother (72.9%), father (5.6%), grandparents (12.1%), other (9.3%) (Figure 4C).

Most respondents (79.4%) reported cultivating medicinal plants at home and only 20.6% do not have this practice (Figure 4A), but they can use plants from neighbors (44%), commerce (29%) and salespeople (27%) (Figure 4B).

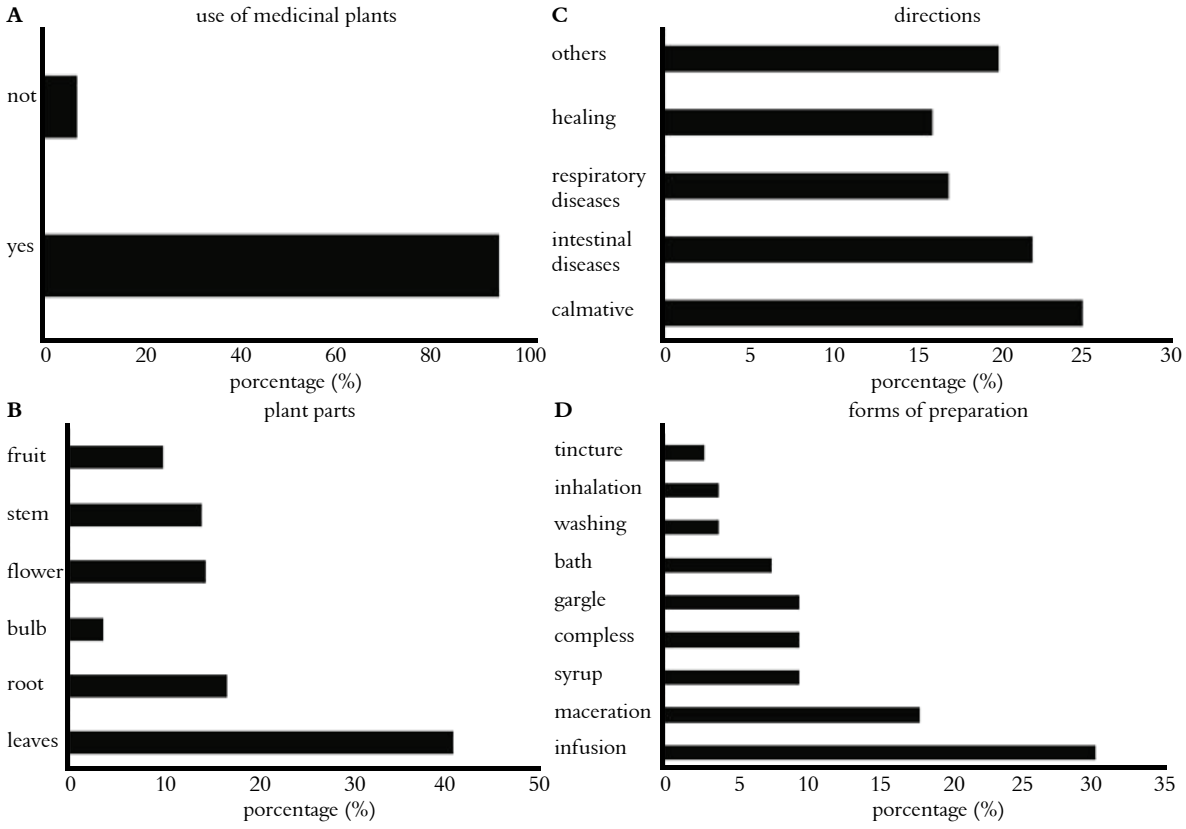

Figure 3. Graphs on ethnobotanical information obtained for the interviewed population from the Itamaraty neighborhood. (A) Percentage of interviewed people using medicinal plants, (B) percentage of plants used, (C) conditions for use of medicinal plants, (D) how plants are prepared.

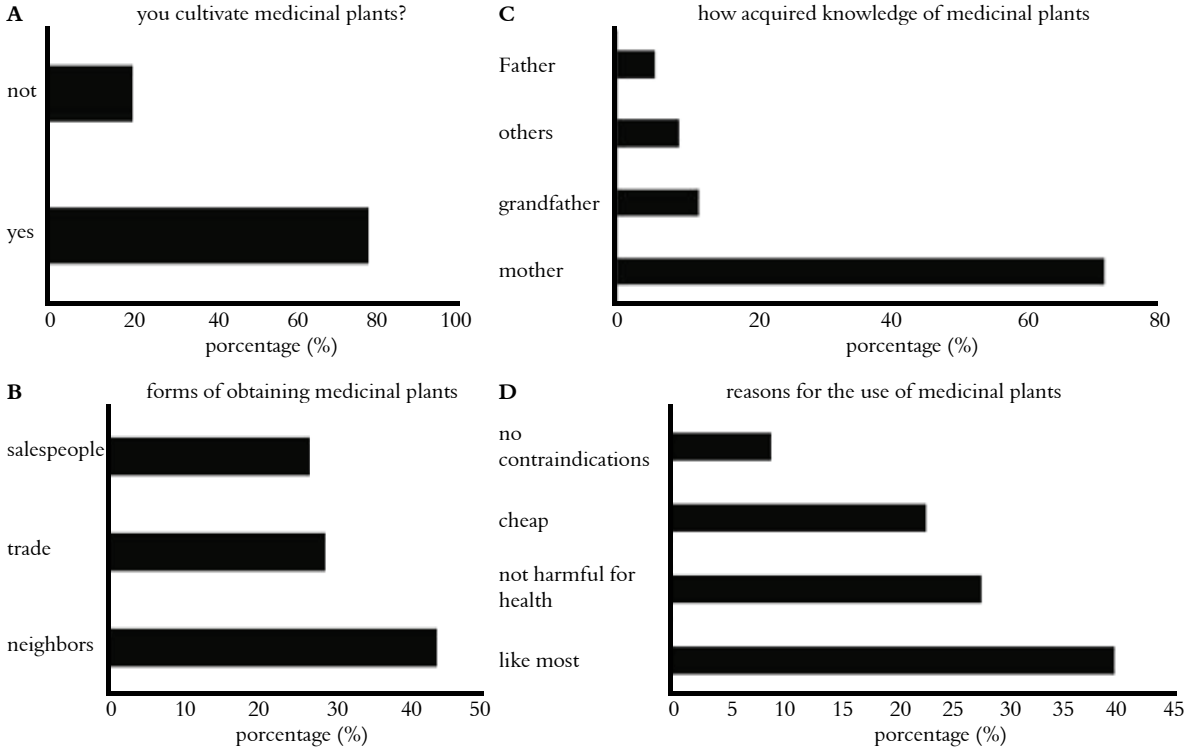

Figure 4. Graphs on ethnobotanical information obtained for the interviewed population from Itamaraty neighborhood. (A) Percentage of interviewed people that cultivate medicinal plants, (B) form of obtaining medicinal plants, (C) acquisition of knowledge on the medicinal plants used, (D) reasons for the use of medicinal plants.

Table 1. Plants used as medicine by residents from the Itamaraty neighborhood separated according to botanical family, use and therapeutic indications.

Family / scientific name / common name	Utilization mode/ plant part	Directions
Acanthaceae		
Justicia pectoralis Jacq. / Anador	Infusion / leaves	Tooth pain, anti-inflammatory agent
Alliaceae		
Allium cepa L. / Scallion	Pass gums / bulb	Dental training
Allium sativum L. / Garlic	Tea, maceration / bulb	Cough, vermifuge
Aloaceae		
Aloe vera (L.) Burm / Aloe	Bath / leaves	Hair fall
Aquifoliaceae		
Ilex paraguariensis St. Hill / Mate	Tea / leaves	Soothing
Asteraceae		
Achillea millefolium L. / Painkillers	Tea / leaves	Headaches
Achyrocline satureioides (Lam.) DC. / Marcelinha	Tea / leaves	Colic, soothing
Ageratum conyzoides L. / Mentrasto	Infusion / root	Cough
Artemísia absinthium L. / Wormwood	Tea, maceration / leaves	Colic, indigestion
Artemisia vulgaris L. / Artemisia	Infusion / leaves	Soothing
Baccharis trimera DC. / Coot	Tea / leaves	Liver disorders, indigestion
Bidens pilosa L. / Hairy	Tea / all plant	Hepatitis, vermifuge
Lychnophora ericoides Less. /Arnica	Bath / leaves, branch	Healing, hematoma
Matricaria chamomilla L. / Chamomile	Infusion / leaves	Soothing, insomnia
Mikania glomerata Spreng. / Guaco	Tea, syrup / leaves	Cough, influenza and bronchitis
Vernonia scorpioides (Lam.) Pers. / Benghalensis	Tea / leaves	Cough
Apiaceae		
Foeniculum vulgare Mill. / Fennel	Tea / leaves	Colic, diuretic
Petroselinum crispum (Mill.) Nyman / Salsa	Tea / leaves / root	Healing
Pimpinella anisum L. / Erva doce	Tea/ leaves	Colic, indigestion
Boraginaceae		
Symphytum officinale L. / Confrey	Tea / leaves	Anti-inflammatory, cough
Brassicaceae		
Nasturtium officinale R.Br. / Waterclass	Tea / leaves, stem	Cold, bronchitis
Caprifoliaceae		
Sambucus australis Cham & Schltdl/Amravati	Tea / leaves	Cooled
Caryophyllaceae		
Dianthus caryophyllus L. / Harpsichord	Tea / flower	Influenza
Chenopodiaceae		
Chenopodium ambrosioides L. /Herb of Santa Maria	Infusion / leaves	Vermifuge
Crassulaceae		
Cotyledon orbiculata L. / Balm	Maceration / leaves	healing, indigestion
Euphorbiaceae		
Phyllanthus niruri L. / Shatterstone	Tea / all plant	Diuretic, renal disorders
Equisetaceae		
Equisetum arvense L. / Horsetail	Tea/ leaves	Renal disorders
Fabaceae		
Acácia langsdorffii Benth. / Cat's craw	Tea/ leaves	Urinary infections
Bauhinia purpurea Wall / Pata-de-vaca	Infusion / leaves, flower, root	Diabetes, diuretic
Bowdichia virgiloides Kunth / Elwood	Maceration / seed	Throats
Stryphnodendron adstringens (Mart.) Coville / Barbatimão	Tea / shell	Anti-inflammatory
Lamiaceae		
Coleus barbatus Andr. / Boldo	Tea / leaves	Liver disorders, indigestion
Lavandula officinalis Chaix & Kitt. / Lavander	Tea / all plant	Indigestion, healing
Mentha piperita L. / Mint	Tea / leaves, flower	Vermifuge, tonic
Mentha pulegium L. / Pennyroyal	Tea / leaves, flower	Soothing, influenza
Ocimum gratissimum L. / Basil	Infusion / all plant	Anti spasmodic
Rosmarinus officinalis L. / Rosemary	Tea / leaves	Energy, exciting
Lauraceae		
Cinnamomum zeylanicum Blume / Canela	Infusion / leaves, shell	Influenza, pain in the body
Persea americana Mill. / Avocado	Tea / leaves, core	Renal disorders, indigestion
Malvaceae		
Gossypium barbadense L. /Cotton	Tea, juice / leaves, seed	Anti-inflammatory agent
Passifloraceae		
Passiflora edulis Sims. / Passion fruit	Infusion / leaves, fruit	Blood soothing, depurative
Plantaginaceae		
Plantago major L. /Plantain	Tea, infusion / leaves, root	Throats
Poaceae		
Cymbopogon citratus (DC.) Stapf. /Lemongrass	Infusion / leaves	Soothing
Punicaceae		
Punica granatum L. / Pomegranate	Tea / fruit, shell	Throats
Rutaceae		
Ruta graveolens L. /Arruda	Infusion, maceration / leaves	Indigestion, vermifuge
Citrus limon (L.) Osbeck /Lemon	Juice, tea / leaves, fruit	Influenza, cough, cold
Verbanaceae		
Lippia alba (Mill.) Blume /Erva cidreira	Infusion / leaves, flower	Sedative, soothing
Vitaceae		
Cissus simsiana Schult & Schult f. /Insulin plant	Tea / leaves	Diabetes
Zingiberaceae		
Curcuma longa L. /Saffron	Tea, maceration / root	Throats
Zingiber officinalis Rosc. /Ginger	Tea / stem	Influenza, indigestion

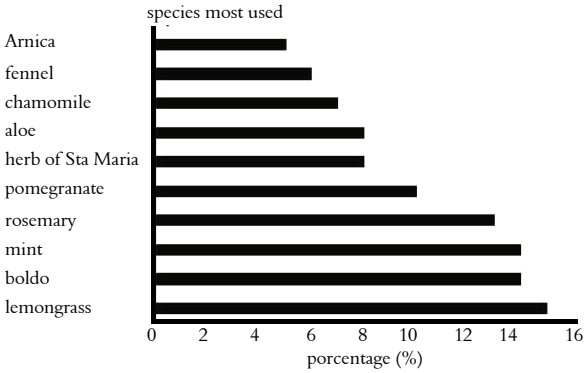

Figure 5. Graph on the frequency of plant species commonly used by people from the Itamaraty neighborhood.

Discussion

Works on medicinal therapies are important to supply information on new data to pharmaceutics industries, medical treatments and basic attention of health; because native or rural populations are an important source of this type of knowledge. This fact was prioritized in this work, and in addition, quantitative and qualitative ethnobotanical and ethnopharmacological data were obtained.

It was observed that women seem to have more care and knowledge on medicinal plants than men (AMOROZO; GÉLY, 2002), especially in the vicinity of the residence (PEREIRA et al., 2009). These data were verified in this work, since gender was not taken into account, but rather, it was asked if the person could provide information on medicinal plants, and this fact determined the difference in frequency between genders.

Vendruscolo and Mentz (2006) report that in an interview in the district of Ponta Grossa, municipality of Porto Alegre, Rio Grande do Sul State, 90.2% of respondents were women.

Age above thirty-five years has also been cited in literature as respondents in others studies (REZENDE; COCCO, 2002), what is justified by the fact that knowledge is maintained by older people in the community (PASA et al., 2005), data identical to those observed here.

Garlet and Irgang (2001) and Grynberg et al. (2002) report that socio-economic factors influence the choice of the population for alternative means of healing, data observed in this work, according to the low educational and socio-economic levels (verified by wage scores), what justify the high use of medicinal plants (93.1%).

The use of scientific families of medicinal plants by this community are consistent with Pasa et al. (2005), who reported that Asteraceae and Lamiaceae are the families with medicinal plants most commonly used in the city of Conceição-Açu, Mato Grosso State.

Vendruscolo and Mentz (2006) reported that these two families (Asteraceae and Lamiaceae) were the most cited in a study conducted in the district of Ponta Grossa (Porto Alegre, Rio Grande do Sul State), Rodrigues and Carlini (2003) reported that plants from the Asteraceae family are the most used by a "quilombola" community of Mato Grosso near Cuiabá, in a study performed by Damasceno and Barbosa (2008) in the Brazilian Savanna region and in the Martinésia community (Uberlândia, Minas Gerais State), the Asteraceae and Lamiaceae families were the most cited.

Alves et al. (2008) in a study conducted in Dourados (Mato Grosso do Sul State) verified that Piperaceae family was the most cited, and the Asteraceae family was not included among the six families most mentioned by this community.

Amorozo (2002) mentioned that Asteraceae was the second family most cited after Euphorbiacea in Santo Antonio de Leverger (Mato Grosso State). The same occurred with the study of Pereira et al. (2009) in Ponta Porã (Mato Grosso do Sul State), in which the number of Asteraceae species was quoted lower than the number of Lamiaceae species, and these authors report that Lamiaceae and Asteraceae families are the most often cited in studies conducted in Southern Brazil.

In general, studies in the Brazilian Savanna region and in Southern Brazil indicate that Asteraceae and Lamiaceae families are the most cited to use as medicinal plants, putatively, because Asteraceae is a family with many species.

In general, the data here obtained are in accordance with other authors that performance this type of study in Brazil.

Amorozo (2002), Rodrigues and Carlini (2003), Pasa et al. (2005) and Damasceno and Barbosa (2008) report that the most common medicinal plants used in the communities studied have beneficial effects for the digestive tract.

Alves et al. (2008) mentioned that the main uses in the community studied was to relieve rheumatic pains and Pereira et al. (2009) report that in Ponta Porã, medicinal plants are mainly used for the relief of headaches, stomachaches and fever, in this order.

Most of papers used in this study indicate that medicinal plants are mostly used to relieve aches and pains of the intestinal tract, therefore, in this work, the data are different from those obtained by others authors in relationship to first score, because the calming effect was the most cited type of therapy, with intestinal disease appearing in second place.

According to Alves et al. (2008), the plant parts most used in ethnobotanical and/or ethnopharmacological studies are leaves (AMOROZO, 2002; PASA et al., 2005; PEREIRA et al., 2009), followed by peel (shell) because, maybe, due to the fact that these plant parts are more accessible and remain in the plants all year long.

Most authors who study the use of medicinal plants indicated that infusion is the most common preparation in communities (ALVES et al., 2008; AMOROZO, 2002; PASA et al., 2005; DAMASCENO; BARBOSA, 2008; PEREIRA et al., 2009) as observed in this study, by the same hypothesis on the preference of leaves as the most used plant part, which is how easy it is to get them, the infusion is the most common method of preparation, is also due to he fact that it is a quick and simple method.

The responses on the use of medicinal plants associated with socio-economic status in this community indicate the need to use this form of therapy to meet the needs of health and medicines; often inaccessible to poor communities.

Other covered item was the "common sense" that drugs originating from medicinal plants are not harmful. Most of the articles used in this work do not include this kind of question in their questionnaires, which allows no comparison with other communities.

The data obtained in this study, corroborate the fact that traditional knowledge is passed from generation to generation, and the cultivation of medicinal plants in areas near the residence favors their use (PASA et al., 2005).

Conclusion

In general, the use of medicinal plants in the Itamaraty neighborhood follows the cultural aspects reported by other authors on the need for use of alternative therapies for poor communities, beyond the general and common use of leaves and infusions as the main form preparation, in order, Asteraceae and Lamiaceae families are the most cited to be used as medicinal plants; however, the most cited medical direction was the calming effects.

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