MEDICINAL HERBS IN URBAN AREAS OF SANTA CATARINA STATE, BRAZIL

Plantas medicinais em áreas urbanas no estado de Santa Catarina, Brasil

Alisson Martins Duarte[1, 2], Karine Louise dos Santos[3], Ana Emilia Siegloch[1] and Pedro Boff[1, 4]

ABSTRACT

The objective of this study was to verify the occurrence and use of medicinal herbs in families living in urban areas. The research was carried out in five cities in the "Planalto Serrano" region of Santa Catarina State, Brazil. The first family was indicated by the health department of the municipality and the following were indicated by the previous one, according to snowball methodology. Interviewees ranged from 39 to 78 years old, who cited 84 species of plants to treat 205 diseases. The herbs were collected from yard (50%), garden (20.2%), neighbors (14.5%), field (8.9%), or bought (6.4%). The using of medicinal herbs still persists in families living in urban areas of the south plateau of Santa Catarina State, Brazil. There is a predominance of females as maintainers and concentrated on people over 50 years.

Palavras-chave: Medicinal Plants. Healing. Disease. Urban Family.

[1] *UNIPLAC/Universidade do Planalto Catarinense - Programa de Pós-Graduação em Ambiente e Saúde, Av. Castelo Branco, 170, Universitário, 88509-900*

[2] *E-mail: alisson_martinsduarte@yahoo.com.br*

[3] *UFSC/Universidade Federal de Santa Catarina - Programa de Pós-Graduação em Ecossistemas Agrícolas e Naturais (PPGEAN), Rod. Ulysses Gaboardi, CP101, 89520-000, Curitibanos, SC. E-mail: karine.santos@ufsc.br*

[4] *EPAGRI/EELages-Lab. Homeopatia e Saúde Vegetal, CP 181, 88502-970, Lages, SC. E-mail: boff.pedro@yahoo.com.br*

RESUMO

O objetivo deste estudo foi verificar a ocorrência e uso de plantas medicinais em familias residentes em áreas urbanas. A pesquisa foi conduzida em cinco cidades da região do Planalto Serrano Catarinense, estado de Santa Catarina, Brasil. O primeiro entrevistado era indicado pelo serviço de saúde do município e os demais indicados pelo anterior, seguindo metodologia de bola de neve. Os entrevistados tinham de 39 a 78 anos de idade, citaram 84 especies de plantas como medicinais para tratar 205 enfermidades humanas. As plantas medicinais utilizadas eram procedentes de hortas (50%), jardins (20,2%), vizinhos (14,5%), campos (8,9) ou compradas (6,4%). O uso de plantas medicinais persistes em familias residentes em áreas urbanas. Há predominio de mulheres como mantenedoras cuja idade se concentra acima de 50 anos.

Keywords: Plantas Medicinais. Cura. Enfermidade. Familia Urbana.

Introduction

Medicinal herbs have accompanied humanity or for its use in treating diseases or their symbolic significance in healing rituals (ALBUQUERQUE, 2005). Ceolin et al. (2011) by studying farmers in the south of Rio Grande do Sul, Brazil, demonstrated that the first resource used in illnesses of the families are the medicinal herbs from home cultivated by themselves. The distance in the access to the public health network is cited as the main factor of the rural families recurring to the plants in the property as a source of cure of acute illnesses and even of the chronic ones (CUNHA and BORTOLOTTO, 2011). Moreover, in urban areas despite the ease access to drugs and public health service, there are reports of continuing use of medicinal herbs as a first source of healing diseases (ROSSATO and KRUGER, 2005).

Plants used for medicinal purposes are predominantly related to ethnic and regional characteristics (PASA et al., 2005). In Brazil, the diversity of ecosystems, climates, and ethnicities has facilitated the building of a diversified biocultural heritage of popular therapies (SANTOS, 2000). In the northeast of the country, Roque et al. (2010) verified that the use of native plants for medicinal and cultural purposes has been preserved and transmitted by the elderly, since they distrust conventional medicine. The popular therapy with the use of medicinal herbs represents the ethno-knowledge that emerges from the interrelations between plant and human being with its natural and social components, being therefore its co-evolutionary product and valid references for use in the communities (HAZAZAKI, 2004). It is known that the practice of popular therapeutics in humans and animals has been based on the development of drugs by the pharmaceutical industry with synthesis of molecules analogous to the active principles identified in the original raw material (MARTINS-RAMOS et al., 2010). On the other hand, the popular use of plants in the treatment of human diseases, takes into account its comprehensive mode of action, referring in most cases as a set of organs or the physiological systems. For example, the coot (*Baccharis trimera* Less) and tankage *(Plantago major* L.) are suitable for the digestive system diseases, without specified the disease of such system (PRADO et al., 2009; ALBERTASSE et al., 2010). According to Velasco and Diaz de Rada (1997), the applied research in community settings is a kind of socio-cultural research that allows systematizing the knowledge to make it useful to the whole society. Fernandes and Boff (2017) reported that in rural area of Santa Catarina State in Brazil, native species of medicinal plants were most commonly found than introduced and naturalized ones. These authors discuss that knowledge of local farmers is strongly influenced by the environment where they live and they can reproduce socially over time in such community called "Cabocla" - ethnic group.

Traditional knowledge regarding medicinal herbs in urban environments, with severe environmental and social change, is constantly subjected to questions by the media and it becomes vulnerably eroded (GANDOLFO and HANAZAKI, 2011). Studies by Rossato and Kruger (2005) addressing policies for the use of medicinal herbs in the public network, showed that despite the ease access to industrial drugs, plants are still used as a healing source of several diseases. Marques (2002) point out that the persistence of popular knowledge in the use of medicinal herbs in urban area is strongly influenced by information coming from rural areas, as a *continuum* of integration between the town and countryside throughout friendships and/or family members. The potential of the use of medicinal herbs in the treatment of diseases by poor communities in urban areas has required adequate guidance for the treatment of acute and/or chronic diseases (BRASILEIRO et al., 2008). The popular knowledge, associated with genetic resources of medicinal herbs found in urban areas, should be contrasted with records occurred in other communities and unequivocally associated with the botanical species to enable indicate its use in public health programs (GANDOLFO and HANAZAKI, 2011).

The objective of this study was to verify the occurrence and cultivation of medicinal herbs by residents in urban areas of the Planalto Catarinense region, Santa Catarina, Brazil.

Material and methods

Characterization of the study area and the interviewed participants

The study comprised urban areas of cities located in the Santa Catarina State Southern Brazil. Four municipalities were considered small, with lass then 10.000 inhabitants (Anita Garibaldi, Cerro Negro, Campo Belo do Sul and São José do Cerrito) and one, it was a regional metropolis (Lages, 156,727 inhabitants) (IBGE, 2010). These cities have a population of predominant "cabocla" as the main cultural characteristics and because of that they were chosen taking into account that "cabocla ethnic group" e their descendents mixed with "gaucho" coutryside tradition could have a persistent knowledge for human healing.. According to Gielda (2008) "cabocla" is the result of a miscegenation of Africans and indigenous people who lived in the region and were marginalized in the colonization process. Afterword, they became used to and modified habits from the Spanish and Portuguese colonizers.

Urban areas were considered as the municipal headquarters of the cities, including the districts (villages), whose perimeters were defined by the respective Cities laws (IBGE, 1992). Rural areas were not considered in this survey because they were outside the perimeters defined by law as urbanization. The study was carried out from June to December 2014, whose first participants out of 46 informants - where located in Anita Garibaldi (5), Campo Belo do Sul (9), Cerro Negro (4), São José do Cerrito (5) and Lages (23). The informants, from each city, were nominated by the respective health secretariats and/or basic health units, because they had knowledge about the use and cultivation of medicinal herbs. Informants signed a free and Informed Consent Form (TCLE) to guarantee protection in all ethical aspects pertinent to the research. The Ethics Committee under number 791.636/2014 approved the project. For the identification of the other informants, the "snowball" methodology described by Bailey (1994) was used. The first informants were considered as "seeds" and these indicated the largest number of people who would be cultivating and/or using medicinal herbs, following the guidance described by Albuquerque (2009). The sample size was defined by the saturation of the mentioned medicinal species, closing the survey in each city when there were no new species cited or when the recruitment arrived in individuals already interviewed, as proposed by Peroni et al. (2010). The curve refers to the mean of the richness values of the samples (Figure 1). When the increase of plant species was less than 5%, we obtained the end of the survey, following a study by Felfili et al. (2011).
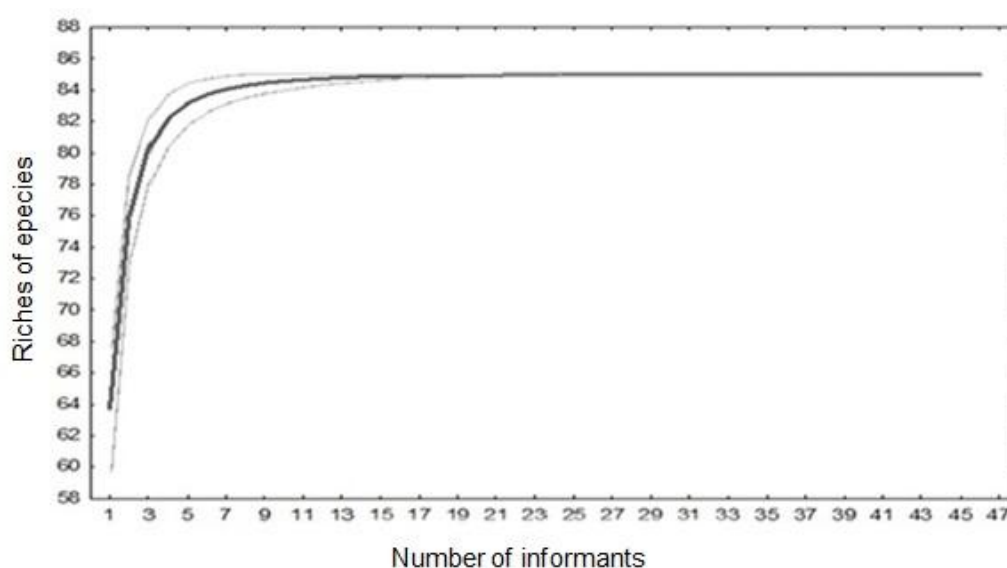

Figure 1. Saturation curve of medicinal species according to urban informants from the Planalto Catarinense region of Santa Catarina State, Brazil. Values are means measured from the five municipalities.

Data collecting

Data collecting has been conducted in two moments: (a) questionnaire-guided interview, containing open or objective questions; (b) visit to the plant cultivation site for sampling and preparation of exsicatas. The questionnaire addressed the cultivation, management, and use of knowledge associated with the treatment of health problems in the family. Plant species referenced by residents in interviews and pointed by them in the backyard of their homes and/or acquired, otherwise bought in markets or natural food stores have been cataloged according to the norms of herborization proposed by Mori et al. (1989). The species were identified in comparison to the herbaria belonging to the State University of Santa Catarina (UDESC), University of Planalto Catarinense (UNIPLAC) and the Agricultural Research and Rural Extension Agency of Santa Catarina State (EPAGRI). Expertise literature and Flora Digital of Rio Grande do Sul was also consulted (REITZ, 1973; SOUZA and LORENZI, 2005; LORENZI, 2008). The specimens processed in exsicates were classified at family, genus and, whenever possible, at species level. We kept the popular denominations since this is something related to local culture.

Cultivation sites were organized in yard (Y) and garden (G). It was considered as yard the place near the residence and intended for the planting of medicinal herbs, fruits and vegetables. Garden was the place made available for ornamentation in front of the residences or in pots. The cultivation of medicinal herbs by the inhabitants was described, collecting data of: (a) soil management: weeding, natural leaves, mowing and using poison; (b) cultural management: spreads gray, applies chemicals on it or uses fertilizer; and (c) multiplication: does not need, makes cutting, makes seed or sows. The origin of medicinal species was recorded as yard (Y), garden (G), neighbors (N), field (F) or purchase (P). Plants were considered coming from neighbors whenever the parts were ready for use. Plants collected in the field were those acquired outside the urban perimeter in one's own or another's area. The growth habit/archetype was classified as herbaceous (Hb), climber (Cl), shrub (Sh) or arboreal (Ar), according to Lorenzi (2008). The used parts indicated by the informants were grouped in plant organs of leaf (L), seed (S), fruit (F), inflorescence (I) bark (B), stalk (St) or rhizome (Rz).

Data analysis

The collected data allowed estimating DVI, diversity of use, uniformity and richness. We estimated the Informant Diversity Value Index (DVI) calculated from the division between the number of citations of each informant and the total number of citations of all informants according to Byg and Baslev (2001). The diversity of plant use among cities and/or informants was estimated by the Shannon-Winner indexes, using the program Diversity of species DivE version 3.0 described by Rodrigues (2015). This index calculates the variance $H' = - \Sigma (p_i) (\ln p_i)$, where: H' = diversity index of Shannon-Winner; $P_i = n_i/N$, where n_i = proportion of species; N = total number of species, as described by Brower et al. (1998). The uniformity was considered by the Pielou equitability index described by Krebs (1989), calculated by the model $E = H'/\log S$, by the program DivE version 3.0 where, E = Pielou equitability index, H' = Shannon-Wiener, S = species richness. The species richness (S) was in accordance with the definition of Felfili et al. (2011) and the number of plants cited in each city. The Student's T-test was adapted to compare the diversity indexes (H') to pairs of samples from each city as described by Magurran (1995).

Results and discussion

Ethnobotany of medicinal herbs in urban areas

Urban residents use plants for therapeutic purposes in the five cities studied covered 84 citations of different popular names. It was possible to confirm that they are 75 botanical species and nine at the genus level distributed in 38 families (Table 1). The indication as new species were reached faster in the four smaller cities (<10,000 inhabitants) compared to Lages. In the city of Lages, due to a larger population (156,737 inhabitants), the number of informants was higher and the names began to repeat from the twentieth interview onwards.

The informants (46) were aged between 39 and 78 years old, being 02 males and 44 females, residing more than 25 years in the respective studied urban area. This shows that the female gender is

the major reference for the use of medicinal herbs, also in urban areas, which is widely reported in rural areas (OLIVEIRA and MENINI-NETO, 2012). Historically, women have a fundamental role in the care of the family, in the maternal instinct and since the beginning of the process, it has been entrusted with the care of family health, especially in rural areas (CEOLIN et al., 2011). Oliveira et al. (2010), studying urban community in the Northeast region of Brazil, showed that out of 26 interviewees only three were men. Cunha and Bortolotto (2011) also reported, the main participation of the female gender, 33 of 35 residents in a settlement of Mato Grosso do Sul. Contrasting results were obtained by Gomes and Bandeira (2012), in an ethnobotanical survey in Bahia, where the male gender had a larger participation than women. However, the women cited a greater number of plants with a greater coverage in the cure of diseases. This shows the tendency of the female gender to have more qualified knowledge about the use of plants for the treatment of diseases than the male gender.

Table 1. Medicinal herbs cited by inhabitants of urban areas in cities (5) of Santa Catarina State, Brazil, with their botanical identification, popular names (Ethnovariety), used part (Organ), habit of growth (Habit), origin (Proc.), and number of citations (NC). Whenever possible, the ethnovariety name was given in English and it was always kept the local name.

Species	Ethnovariety (local name)	Organ	Habit	Proc.	NC
ADOXACEAE					
Sambucos australis Cham. & Schltdl.	Sabugueiro	L	Ar	Y,N	12
ALLIACEAE					
Allium fistulosum L.	Cebolinha-verde (*green onion*)	L	Hb	Y	2
ALISMATACEAE					
Echinodorus grandiflorus Mitch.	Chapéu-de-couro	L	Hb	Y,N	1
AMARANTHACEAE					
Chenopodium ambrosioides L.	Erva de santa maria	L,I	Hb	Y,G	3
Spinacia oleracea L.	Espinafre (*spinach*)	L,St	Hb	Y	1
APIACEAE					
Foeniculum vulgare Mill.*	Funcho (*fenel*)	L,S	Hb	Y,P	19
Petroselinum crispum L.	Salsinha (*parsley*)	L,St	Hb	Y	2
Pimpinella anisum L.	Anis (*anise*)	L,S	Hb	P,Y	1
ARISTOLOCHIACEAE					
Aristolochia triangularis Cham.	Cipó-mil-homens	L	Cl	F,N	4
ASTERACEAE					
Achillea millefolium L.	Pronto-alívio/novalgina	L	Hb	Y	7
Achyrocline satureioides (Lam.) DC.	Marcela (macela)	I	Hb	F	29
Artemisia absintthium L.	Losna	L	Hb	Y,G	8
Artemisia canphorata Vill.	Canflor	L,I	Hb	Y	2
Artemisia vulgaris L.	Artemija	L	Hb	Y	2
Baccharis trimera (Less.) DC.	Carqueja	L	Hb	Y	6
Calendula officinalis L.	Calêndula	L	Hb	Y	1
Chamomilla recutita (L). Rauschert.	Maçanilha, camomila	L	Hb	Y	18
Chaptalia nutans (L.) Polak.	Arnica	L	Hb	Y,F	6
Cynara scolymus L.	Alcachofra (artichoke)	L,I	Hb	Y	2
Gochnatia polymorpha (Less.) Cabr.	Cambará	L	Ar	Y	5
Lactuca sativa L.	Alface (*lettuce*)	L	Hb	P,Y	3
Mikania glomerata Spreng.	Guaco	L,I	Hb	Y,G	13
Senecio brasiliensis (Spreng.) Less.	Maria-mole	L,I	Hb	F	1
Taraxacum officinale Wiggers	Dente de leão	L	Hb	Y	1
Tanacentum vulgare L.	Catinga-de-mulata	L	Hb	Y,G	3
Xerochysum bracteatum L.	Sempre viva	L,I	Hb	G	2

BORAGINACEAE					
Symphytum officinale L.	Confrei	L	Hb	Y	3
BRASSICACEAE					
Brassica sp.***	Couve	L	Hb	Y	1
Coronopus didymus (L.) Sm.	Mentruz	L	Hb	Y,N	2
Nasturtium officinale R. Br.	Agrião	L	Hb	Y	3
BURSERACEAE					
Commiphora myrrha (Nees) Engl.	Mirra	L,I	Ar	Y	1
CACTACEAE					
Opuntia ficus-indica (L.) Mill.	Tuna	F,I	Ar	Y	1
CELASTRACEAE					
Maytenus ilicifolia Schwacke	Espinheira-santa	L	Sh	F,N	27
CONVOLVULACEAE					
Ipomoea batatas L.	Batata doce (*sweet potato*)	L	Hb	Y	1
CUCURBITACEAE					
Sechium edule (Jacq.) Swartz	Chuchu	L	Cl	Y	1
EQUISETACEAE					
Equisetum gigateum L.	Cavalinha	L	Hb	Y,N	19
FABACEAE					
Bauhinia forficata Link	Pata-de-vaca	L	Ar	Y,G	10
LAMIACEAE					
Cunila galioides Benth.	Poejo	L	Hb	Y,G,N	11
Lavandula officinalis L.	Alfazema/Lavanda (*lavender*)	L	Hb	Y	7
Melissa officinalis L.	Cidreira (*balm*)	L	Hb	Y,G	31
Mentha sp.	Hortelã (*white mint*)	L	Hb	Y,G,N	37
Ocimum selloi Benth.	Manjericão/Alfavaca	L	Hb	Y,G	3
Origanum vulgare L.**	Manjerona(*marjoram*)	L	Hb	Y,P	22
Plectranthus barbatus Andrews.	Boldo	L	Hb	Y	18
Rosmarinus officinalis L.	Alecrim (*rosemary*)	L	Sh	Y,G	18
Salvia mycrophilla Kunth.	Anador	L	Hb	Y,N	3
Salvia officinalis L.	Sálvia (*sage*)	L	Hb	Y,G,N	11
Sthachys byzantina C. Koch S.	Pulmonária	L	Hb	Y,G	3
LAURACEAE					
Cinnamomun zeylanicum Breyn.*	Canela (*cinnamon*)	B	Ar	P	2
Laurus nobilis L.	Loro	L	Ar	Y	1
Persea americana Mill.	Abacateiro(*avocado*)	L	Ar	Y,N	2
Persea willldenovii Kosterm.	Andrade	B	Ar	N	1
LILIACEAE					
Allium sativum L.*	Alho (*garlic*)	S	Hb	P	7
Lilium longiflorum Thunb.	Lírio branco (*white lily*)	L	Hb	G	1
LYTHRACEAE					
Cuphea carthagenensis (Jacq.) Macbr.	Sete-sangria	L	Hb	F	1
Punica granatum L.	Romã (*pomegranate*)	B	Ar	Y	1
MALVACEAE					
Malva parviflora L.	Malva	L	Hb	Y,G,N	27

Part of the plant used (Rz = rhizome, L = leaf, B = bark, S = seed, I = inflorescence, F = fruit, St = stalk); Growth habit (Hb =

MYRISTICACEAE					
Myristica fragans Houtt.*	Noz-moscada (*nutmeg*)	S	Ar	P	7
MYRTACEAE					
Acca sellowiana (O. Berg) Burret	Goiaba serrana (*feijoa*)	L	Ar	Y,N	3
Campomanesia xanthocarpa O. Berg	Guabiroba	L	Ar	F	1
Eucalyptus sp.***	Eucalipto (*eucalyptus*)	L	Ar	N,P	3
Myrciaria cauliflora (Mart.) O. Berg	Jabuticaba	F	Ar	Y	5
Syzygium aromaticum (L.) Merr. & L.M. Perry*	Cravo (*indian carnation*)	I	Ar	P	2
NYCTAGINACEAE					
Mirabilis jalapa L.	Maravilha (marvel)	L	Hb	G	1
PAPAVERACEAE					
Chelidonium majus L.	Iodo da terra	L	Hb	Y	1
PHYLLANTHACEAE					
Phyllanthus tenellus Roxb.	Quebra-pedras	L	Hb	Y,G	13
PHYTOLACCACEAE					
Petiveria alliacea L.	Guiné	L	Hb	Y,G	2
PIRERACEAE					
Piper sp.***	Jaguarandi	L	Sh	Y,N	2
PLANTAGINACEAE					
Plantago tomentosa Lam.	Tanchagem	L	Hb	Y,G	13
POACEAE					
Coix lacryma-jobi L.	Lágrima N. senhora	L,F	Hb	Y,G	2
POLYGONACEAE					
Rumex sp.***	Língua de vaca	L	Hb	Y	1
ROSACEAE					
Eriobotrya japonica (Thunb.) Lindl.	Ameixá-cambará	I	Ar	Y,N	6
Rosa sp.***	Rosa "branca" (*white rose*)	I	Hb	G	4
Rubus sp.***	Amora branca	L	Sh	F	3
RUTACEAE					
Citrus aurantium L.	Laranja (*Orange*)	L	Ar	Y,N	5
Ruta graveolens L.	Arruda (*rue*)	L	Hb	Y,G	10
Zanthoxylum rhoifolium Lam.	Mamica de cadela	B	Ar	F	2
THEACEAE					
Camellia sp.***	Camélia (camellia)	I	Ar	G	2
VERBENACEAE					
Aloysia gratíssima (Gillies&Hook)Tronc	Erva-cheirosa	L	Sh	Y,G	2
Aloysia triphylla (L Herit.) Britton.	Cidró	L	Sh	Y	4
Vitex megapotamica (Spreng.) Moldenke	Tarumã	L, F	Ar	F	1
VIOLACEAE					
Viola adorata L.	Violeta (violet)	L,I	Hb	G	3
WINTERACEAE					
Drimys angustifolia Miers	Casca d'anta	B	Ar	F	4
ZINGIBERACEAE					
Zingiber sp.***	Gengibre (*ginger*)	Rz	Hb	Y,N	18

herbaceous, Cl = climber, Sh = shrub, Ar = arboreal); Local collection of species (Y = yard, G = garden, F = field, N = neighbors, P = purchase); NC = number of citations.
* Species identified from supplied seeds that were acquired at commercial stores.
** Two quotes of "oregano" were identified as "marjoram", according to the label of the product that was purchased from commercial stores.
*** Specimens identified up to the genus category.

The most representative botanical families in number of species were Asteraceae (17) and Lamiaceae (11). The greater species richness of the Asteraceae family for medicinal use is facilitated because their seed spread freely and there are favorable climatic conditions in the study region (SOUZA and LORENZI, 2005). The higher the number of species in a family, the greater is the probability that people who use plant resources will use them (GUARIM NETO and MORAES, 2003). Therefore, it is possible that the greater medicinal use of species from Asteraceae and Lamiaceae was influenced by the greater diversity of species of such botanical families (ALMEIDA et al., 2012). Fernandes et al. (2013) also identified the highest number of medicinal species in Asteraceae (31), Lamiaceae (16), and Verbenaceae (6) in the rural areas of the some geographic region of our study. The migration of rural families to urban areas, in recent years, supports the idea that informants from urban areas still have a connection with the rural environment (AMOROZO, 2002a; GIRALDI and HAZAZAKI, 2010).

The medicinal species were predominantly herbaceous (64.3) followed by shrub (26.2%), arboreal (7.1%), and climber (2.4%). Medeiros et al. (2004) also had found predominance of herbaceous (61.8%) and shrub (23.5%) in an ethnobotanical study in the Rio das Pedras, Mangaratiba (RJ). This preference is related to the effectiveness of the plant specimen and its availability in relation to the disease to be treated. Although medicinal tree species (arboreal) possess a greater amount of medicinal compounds than herbaceous ones, these do not fit the urban conditions, since the yards have limited physical space, unlike what occurs in rural areas (ALMEIDA et al., 2005).

The genus *Mentha* had greater citation species (n=37) and likewise the most popular names: big shots mint, white mint and purple mint. This result is due to its broader spectrum of treatment, which includes digestive problems, soothing, colds and elimination of worms. The use of the genus *Mentha* had unanimity of informants for using in children as a treatment for worms, colds and soothing effect. Fernandes and Boff (2017) also reported the most frequent use of *Mentha* in rural areas of the same region, but not the following second and third that was *Acheillea millefolium* (naturalized) and the native arbustive *Gochnatia polymorpha.* In contrast, the second kind of higher citation (n=31) in the urban area, was the balm *(Melissa officinalis)* used as soothing and relieve cough. The macela *(Achyrocline satureioides)* (n= 29) was cited for the treatment of stomach, bladder and soothing effect. The use of macela in the region of study has its religious character, because during the Christian religious date of Good Friday (MOTA, 2008). There is the custom of making the collection of macela in the Good Friday and for being considered holy is used during the whole year for several illnesses. Due to its high popularity of use and collection in that religious date of the region it was expected that the macela would be the most cited. However, macela often shares with *Mentha* and *Melissa* its popular use in the urban area. *Ilicifolia Maytenus* and *Malva parviflora* showed 27 citations each, the first to use on digestive problems and second to infections.

The most used part of the plants were leaves (70.4%), followed by flowers (14.3%), fruits (4.1%), seeds (4.1%), bark and stalk (2.0%), and rhizome (1.0%). The predominance of the leaves using of the medicinal species is because the leaves are present for most of the year and because they are easy to collect (MEDEIROS et al., 2004; GIRALDI and HANAZAKI, 2010). The set of leaves and flowers use was cited for the species of *Chenopodium ambrosioides, Artemisia alba, Cynara scolymus, Mikania* sp, *Senecio brasiliensis, Xerochysum bracteatum, Commiphora myrrha,* and *Viola adorata.*

The interviewees' knowledge of medicinal herbs showed predominance on maternal (86.9%), maternal/paternal (12.0%) inheritance, leaving only 1.1% to paternal one. This maternal predominance refers to being the mother as the first caregiver of family health in urban areas. Studies by Cunha and Bortolotto (2011), in Mato Grosso do Sul state, Brazil, also showed the maternal reference in the first care of the newly sick family member. Calabria et al. (2008) argue that women who spend more time at home taking care of household chores take the first precautions with the use of medicines. The highest number of species mentioned was concentrated in the female gender, with the highest DVI values in two age groups from 51 to 60 years old (0.57) and from 61 to 70 years old (0.48) (Table 2). In contrast, Fernandes and Boff (2017) reported that in rural area of the same region that we have studied, woman among 30 to 40 years old presented the highest DVI among female gender.

Table 2. Informant Diversity Value Index (DVI) to age group and gender in cities (5) of Santa Catarina State, Brazil, 2014.

Gender	Age	Cited species (No.)	DVI *
	30-40	16	0.19
	41-50	28	0.33
Female	51-60	48	0.57
	61-70	41	0.48
	71-80	31	0.36
Male	41-50	.	0.09
	61-70	15	0.17

DVI - calculated from the division between the number of citations of each informant and the total number of citations of all informants.

The greatest dedication in medicinal herbs in this age group may be because they live longer in these cities or because they are participating in the pastoral care of health. Begossi et al. (2002), in a study with Caiçaras communities in the states of Rio de Janeiro and São Paulo, showed that the knowledge of medicinal herbs was concentrated in women over 50 years. Oliveira and Menini-Neto (2012), in an ethnobotanical study in the Manjolinho community, city of Lima Duarte, Minas Gerais state, verified that interviewees of 60 years old referred the knowledge inherited from their ancestors. For the age group of 51-60 years old, the informant considers the knowledge appropriate, since most are participating in projects that involve medicinal gardens free initiative.

The richness of the used medicinal plants was higher in the cities of Lages (66) and Campo Belo do Sul (44) (Table 3). The city of Anita Garibaldi had lower species richness (25) and the greater number of people who did not accept to participate in the assessment. The equitability (J') was higher in the cities of São José Cerrito and Cerro Negro (0.95), with the two cities similar in the "cabocla" ethnic group (GIELDA, 2008). This may demonstrate that the use of plants for therapeutic purposes has a relatively uniform distribution among the informants of these localities. In the city of Lages, the lowest index of equitability (0.91) was obtained, which indicates that the use has a lower uniformity among the interviewees of that city. This is probably due to the greater distance between communities, allowing external influences on the indication of plants for healing. Studies performed by Pinto et al. (2006) in Itacaré, Bahia state, showed values of equitability (0.92) close to our study. On the other hand, Botrel et al. (2006), in a study about the use of native vegetation in the city of Ingaí, Minas Gerais state, obtained low uniformity of informants on species of Medicinal herbs with equitability value of 0.76, which indicates ecological and cultural diversity, unlike ours study.

Table 3. Richness of species (S), Shannon-Wiener diversity index (H ') and equitability (E) on medicinal herbs in families living in urban areas of Santa Catarina State, Brazil, 2014.

City	Informants (No.)	S*	H'*	E*
Anita Garibaldi	5	25	1.31	0,93
Campo Belo do Sul	9	44	1.54	0.93
Cerro Negro	4	26	1.35	0.95
São José do Cerrito	5	26	1.35	0.95
Lages	23	66	1.67	0.91

* S = richness of species cited; H = Shannon-Wiener diversity index; E = equitability.

The "holders of knowledge" in the cities of Anita Garibaldi, Campo Belo do Sul, Cerro Negro and São José do Cerrito, sampled in this study, were easily depleted and, consequently, the species became repeated. Even that, the research continued to ensure there would be no other usage citations. The interviewees of Campo Belo do Sul and São José do Cerrito had already participated in the Pastoral health, being a reference to the use of medicinal herbs in these cities. The Pastoral health is a nonprofit civic-religious organization that works in the solidarity, community and political-institutional dimension and uses medicinal and phytotherapeutic species in the treatment of various diseases (CNBB, 2011). The Pastoral care of health seems to have high popular legitimacy in several Brazilian regions. Tomazzoni

and Nerelle (2006) report that the Pastoral health service is an important supplier of medicinal species in the western region of Paraná. Pilla et al. (2006) also report that in some cities of São Paulo state, the Pastoral care of health, besides providing medicinal herbs, is a therapeutic reference for the community. Cunha and Bortolotto (2011) describe that health Pastoral activists organize courses on the use, cultivation and preparation of Medicinal herbs. Moreover, to stimulate a community garden, Pastoral care play an educational and social role.

The diversity of medicinal herbs indicated by the Shannon-Wiener index (H'), showed a high approximation between Lages (H'= 1.67) and Campo Belo do Sul (H'= 1.54), respectively, 66 and 44 mentioned species (Table 3). In the cities of Cerro Negro and São José do Cerrito, the indices also equaled (H'= 1.35). However, showed uniformity of plant species used for medicinal purposes that can be identified when comparing the species cited in each city since the wealth was the same (26). In these cities, the species cited were similar, possibly because of the great influence directly or indirectly the Pastoral health service, through courses and conviviality. This indicates strong influence of Pastoral care for the use of Medicinal herbs in the families of urban areas, especially in smaller towns. Our diversity indices (H') are close to those found by Figueiredo et al. (1993) and Fonseca-Kruel and Peixoto (2004) in Rio de Janeiro, with 58 informants (H'= 1.65, 90 species; H' = 1.65, 50 species) and Begossi et al. (1993) in São Paulo (H '= 1.57, 128 species, 56 informants). However, differs from traditional communities of Mato Grosso state, where Amorozo (2002a) found H'= 5.09 in Santo Antonio do Leveger and the city Itacare in Bahia with H' = 4.21 (PINTO et al., 2006). According to Botrel et al. (2006), high diversity indexes suggest that the population uses a large portion of the local variety of plants for medicinal purposes, which can differ greatly, even in nearby communities. In traditional communities, it was demonstrated the high importance of such people to know the potential use of medicinal herbs present in such communities as first resource of healing (COSTA et al., 2017).

Comparing the Shannon-Wiener indexes by T-test it shows that there are differences between some cities. This result occurred between Lages x São José do Cerrito ($T_{0,05}$= 9.98, p<0.05), Lages x Cerro Negro ($T_{0,05}$= 9.98, p<0.05), Lages x Anita Garibaldi ($T_{0,05}$= 8.40, p<0.05), and Lages x Campo Belo do Sul ($T_{0,05}$= 3.89, p<0.05). Despite the relative proximity of these cities, they keep cultural peculiarities and different opportunities to learn about the medicinal herbs that reflects in its use. The diversity between neighboring communities was also reported by Amorozo (2002a) in his study in Santo Antônio do Leverger, Mato Grosso state ($T_{0,05}$= 4.033, p<0.05), and high wealth in two areas (S=228 and S=259). However, it is known that the distance is comparatively higher than among the cities of our study.

Cultivation and management

The most common location for cultivation of medicinal herbs in the urban areas was the backyard (50%). In the garden, which is the space in front of the homes, it was the second most cited location for cultivation (20.2%). In our study, the garden keep the species *Lilium* sp. (white lily), *Mirabilis jalapa* (marvel), *Rosa* sp. (white rose), *Camellia* sp. (Camellia), and *Viola adorata* (violet), that shows dual function of being medicinal and ornamental purpose. Amorozo (2002b), having study the composition of gardens and yards, point out that these are related to family history, reflecting the experiences and family therapy, which refers to the species being multifunctional. According to Pasa et al. (2005), the medicinal uses overlap the ornamental value in rural areas, whereas in urban communities for compatibility multiple purpose, including to be consumed as food. Only the species of *Mentha* sp. (mint) and *Melissa officinalis* (lemon balm) were found concomitantly in backyards and gardens. Giraldi and Hanazaki (2010) reported that the yards and surrounding areas as the main sources of medicinal herbs in a study in the Ribeirão da Ilha, Florianópolis, which can determine the prevalence of a species and its associated knowledge. In our research, the neighbors have considerable value because they provide medicinal herbs in 14.5% of cases, either the plant itself for consumption or seedlings for multiplication.

Cultivation techniques were similar in all the cities. The respondents of São José do Cerrito (n = 5) and Cerro Negro (n = 4) used organic fertilizer and ash with manual weeding to keep the plants healthy. In these cities, households (80%) made the seedlings of *Mentha* sp. (mint) and *Rosmarinua officinalis* (rosemary). On the other hand, in larger urban areas, as in the city of Lages (n=23), only 60.9%

of respondents used organic fertilizer. In Campo Belo do Sul (44.4%) and Anita Garibaldi (40.0%), households also multiply their own seedlings of *Chamomilla recutita* (chamomile), *Melissa officinalis* (lemon balm), *Mentha* sp.(mint)*, Rosmarinun officinalis* (rosemary), *Ruta graveolens* (rue), and *Salvia officinalis* (sage). One can show that the cultivation techniques tend to be ecological based system, as the lower the urban area is. Ecological based system means non-use of pesticides, synthetic fertilizers and reducing unnecessary intervention (CEOLIN et al., 2011).

The acquisition of medicine in the local market has been affirmed to occur by 6.45% of the informants. The arguments were that not all medicinal herbs can be cultivated and kept in home to be available for use whenever needed. The species most frequently to purchase were the *Foeniculum vulgare* (fennel/anise), *Pimpinella anisum* (anise), *Lactuca sativa* (lettuce), *Origanum vulgare* (Marjoram), *Cinnamomun zeylanicum* (cinnamon), and *Allium sativum* (garlic).

Conclusion

This research has showed that urban dwellers from the South Plateau of Santa Catarina keep popular knowledge about the using of plants for medicinal purposes. There is a predominance of females as maintainers of this knowledge and concentrated on people over 50 years, which indicates vulnerability to be eroded over the generations. Elderly women from the south plateau of Santa Catarina state have local knowledge about medicinal herbs and their relation to health, despite access to basic health units. This indicates the great importance in the maternal inheritance and dissemination of medicinal herbs knowledge. The most used part of botanical species are the leaves, indicating a better adaptation to be present most of the year. Backyards are the most representative sites for cultivation in urban areas, and the gardens right representation assuming be medicinal herbs also with ornamental function. Cultivation techniques demonstrate rural characteristics. This study may contribute to the implementation of public policies on the use of medicinal species in the National Health System, since the aforementioned diseases can be investigated/prevented and families may grow the plants used of proven efficacy.

Acknowledgments

References

ALBERTASSE, P. D.; et al. Plantas medicinais e seus usos na comunidade da Barra do Jacu, Vila Velha, ES. **Revista Brasileira de Plantas Medicinais** v.12, p. 250-260, 2010.

ALBUQUERQUE, E. M. de. **Avaliação da técnica de amostragem "Respondent-driven Sampling" na estimação de prevalência de Doenças Transmissíveis em populações organizadas em redes complexas**. Escola Nacional de Saúde Pública Sergio Arouca – ENSP; Rio de Janeiro: Ministério da Saúude – Fiocruz, 99p, 2009.

ALBUQUERQUE, P. **Introdução à Etnobotânica**. 2ª ed. Rio de Janeiro: Interciência. 2005.

ALMEIDA, J. R. G. S.; et al. Diploflavone, a New Flavonoid from Diplotropis ferrugínea Benth. (Fabaceae). **Journal of the Brazilian Chemical Society**, v. 16, p.1454-1457, 2005.

ALMEIDA, C. F. C. B. de, et al. Intracultural Variation in the Knowledge of Medicinal herbs in an Urban-Rural Community in the Atlantic Forest from Northeastern Brazil. **Evidence-Based Complementary and Alternative Medicine** 2012: 15; DOI:10.1155/2012/679373. Accessed in Nov. 15th, 2014.

AMOROZO, M. C. M. Uso e diversidade de plantas medicinais em Santo Antônio do Leverger, MT, Brasil. **Acta Botanica Brasilica**, v.16, n.2, p.189-203, 2002.

AMOROZO M. C. M. Tradicional agriculture, enduring spaces and the joy of planting. In: Albuquerque, U.P. de, Alves, A.G.C., Silva ACBL, Da Silva VA (Orgs.) **Atualidades em Etnobiologia e Etnoeologia**. Recife, PE: Sociedade Brasileira de Etnobiologia e Etnoecologia, 2002b. pp.123-131.

BAILEY, K.D. **Methods of Social Research**. 4th. ed. New York: Free Press, 1994.

BEGOSSI, A.; et al. Plant uses in a Brazilian coastal fishing community (Buzios Island). **Journal Ethnobiology** v.13, n.2, p.233-256, 1993.

BEGOSSI, A.; et al. Medicinal herbs in the Atlantic Forest (Brazil): Knowledge, Use, and Conservation. **Human Ecology** , v.30, n.3, p.281-299, 2002.

BRASILEIRO, B. G.; et al. Plantas medicinais utilizadas pela população atendida no Programa de Saúde da Família, Governador Valadares, MG, Brasil. **Revista Brasileira de Ciências Farmacêuticas** , v.44, n.4, p.629-636, 2012.

BROWER, J. E.; et al. **Field and Laboratory Met 2008. hods for Gener. Ecology**. New York: 4 th WCB/McGraw, 1998.

BOTREL, R.T.; et al. Uso da vegetação nativa pela população local no município de Ingaí, MG, Brasil. **Acta Botanica Brasilica** v.20, n.1, p.143-156, 2006. DOI: 10.1590/S0102-33062006000100014. Accessed in Oct. 15th, 2015.

BYG A, BALSLEV H. Diversity and use of palms in Zahamena, Earsten Madagascar. **Biodiversity Conservation** v.10, p.951-970, 2001.

CALÁBRIA, L.; et al. Levantamento etnobotânico e etnofarmacológico de plantas medicinais em Indianópolis Minas Gerais, Brasil. **Revista Brasileira de Plantas Medicinais** v.10, n.1, p.49-63, 2008.

CEOLIN, T.; et al. Plantas Medicinais: transmissão do conhecimento nas famílias de agricultores de base ecológica no Sul do RS. **Revista da Escola de Enfermagem da USP,** v.45, n.1, p.47-54, 2011. DOI: doi.org/10.1590/S0080-62342011000100007. Accessed in Oct. 15th, 2015.

COSTA, I. C. B.; et al. Ethnobotanical survey of medicinal flora in the rural community Rio dos Couros, state of Mato Grosso, Brazil. **Boletin Latinoamericano y del Caribe de Plantas Medicinales y Aromáticas,** v.16, n.1, p.53-67, 2017.

CUNHA, S. A. da; BORTOLOTTO, I. M. Etnobotânica de Plantas Medicinais no Assentamento Monjolinho, município de Anastácio, Mato Grosso do Sul, Brasil. **Acta Botanica Brasilica** v.25, n.3, p.685-698, 2011; DOI: 10.1590/S0102-33062011000300022. Accessed in Oct. 15th, 2015.

CNBB-Conferência Nacional dos Bispos do Brasil. **Pastoral da Saúde Nacional.** Brasília (DF): Edições CNBB, 2011. Available in: http://pastoraldasaudenacional. com.br/pastoral-da-sa%C3%BAde.php. Accessed in Mar. 20th, 2016.

FERNANDES, P.; BOFF, P. Medicinal plants in the family farms of rural areas in southern Brazil: ecological and ethnobotanical aspects. **Boletin Latinoamericano y del Caribe de Plantas Medicinales y Aromáticas** v.16, n.5, p.493-505, 2017.

FERNANDES, P.; et al. Etnobotânica de plantas medicinais: potencialidades do uso de fitoterápicos nas unidades básicas de saúde no Planalto Serrano Catarinense. Cadernos de Agroecologia, v.8, n.2, 2013.

FELFILI, J. M.; et al. **Fitossociologia no Brasil: métodos e estudos de caso**. Minas Gerais: Universidade Federal de Viçosa, 2011.

FIGUEIREDO, G. M.; et al. Ethnobotany of Atlantic Forest Coastal Communities: diversity of plant uses in Gamboa (Itacuruçu Island, Brazil). **Human Ecology,** v.2, n.4, p.419-430, 1993.

FONSECA-KRUEL, V.S.; PEIXOTO, A.L. Etnobotânica na reserva extrativista marinha de Arraial do Cabo, RJ, Brasil. **Acta Botanica Brasilica**, v.18, p.77-190, 2004. DOI: 10.1590/S0102-33062004000100015. Accessed in Oct. 15th, 2015.

GANDOLFO, E.S.; HANAZAKI, N. Etnobotânica e urbanização: conhecimento e utilização de plantas de restinga pela comunidade nativa do distrito do Campeche (Florianópolis, SC). **Acta Botanica Brasilica**, v.25, n.1, p.168-177, 2011; DOI: 10.1590/S0102-33062011000100020. Accessed in Oct. 16th, 2015.

GIELDA, M. F. A comida como traço étnico da cultura cabocla no limiar do século XXI. **Revista Grifos,** v.25, n.97-106, 2008.

GIRALDI, M.; HANAZAKI, N. Uso e conhecimento tradicional de plantas medicinais no Sertão do Ribeirão, Florianópolis, SC, Brasil. **Acta Botanica Brasilica**, v.24, n.2, p.395-406, 2010. DOI: 10.1590/S0102-33062010000200010. Accessed in Jan. 16th, 2015.

GOMES, T. B.; BANDEIRA, F. P. S. de. Uso e diversidade de plantas medicinais em uma comunidade quilombola no Raso da Catarina, Bahia. **Acta Botanica Brasilica** v.26, n.4, p. 796-809, 2012. DOI: 10.1590/S0102-33062012000400009. Accessed in Jan. 16th, 2015.

GUARIM NETO, G.; MORAIS, R. G. Recursos medicinais de espécies do Cerrado de Mato Grosso: Um estudo Bibliográfico. **Acta Botanica Brasilica** v.17, n.4, p.561-584, 2003. DOI: 10.1590/S0102-33062003000400009. Accessed in Jan. 16th, 2015.

HANAZAKI, N. **Etnobotânica**. In: Ecologia Humana de Pescadores da Mata Atlântica e da Amazônia, Begossi A (ed.). São Paulo: FAPESP/HUCITEC, 2004, pp 37-57.

IBGE-**Instituto Brasileiro de Geografia e Estatística** (2010). Available in http://www.censo2010.ibge.gov.br. Accessed in July 10th, 2014.

IBGE. **Instituto Brasileiro de Geografia e Estatística**. Departamento de Geociências. Noções Básicas de Cartografia. Rio de Janeiro 1992. Available in: http://www.ibge.gov.br/home/geociencias/cartografia/manual_nocoes/elementos_representacao.html. Accessed in Nov. 16th, 2013.

KREBS, C. J. **Ecological methodology**. New York: Harper Collins Publishers.1989.

LORENZI, H.; MATOS, F. J. A. **Plantas Medicinais no Brasil: nativas e exóticas**. Nova Odessa: Instituto Plantarum. 2008.

MAGURRAN, A. E. **Measuring biological diversity**. Blackwell Publishing. 1995.

MARQUES, M. I. M. O Conceito de espaço rural em questão. **Revista Terra Livre** , v.9, p.95-112, 2002.

MARTINS-RAMOS, D.; et al. Plantas medicinais de um remanescente de Floresta Ombrófila Mista Altomontana, Urupema, Santa Catarina, Brasil. **Revista Brasileira de Plantas Medicinais,** v.12, n.3, p.380-397, 2010. DOI: 10.1590/S1516-05722010000300016. Accessed in Jan. 16th, 2015.

MEDEIROS, M. F. T.; et al. Plantas medicinais e seus usos pelos sitiantes da Reserva Rio das Pedras, Mangaratiba, RJ, Brasil. **Acta Botanica Brasilica** v.18, n.2, p.391-399, 2004. DOI: 10.1590/S0102-33062004000200019. Accessed in Jan. 16th, 2015.

MORI A. S; et al. **Manual de Manejo de Herbário Fanerogâmico**, Ilhéus: Centro de Pesquisas do Cacau. 1989.

MOTA, F. M. Atividade antibacteriana in vitro de inflorescências de *Acyrocline satureioides* (Lam.) D.C. Asteraceae ("marcela") como fator de proteção em zoonoses. Dissertação de Mestrado em Ciências Veterinárias UFRS. Porto Alegre, 2008.

OLIVEIRA G. L. de; et al. Plantas medicinais utilizadas na comunidade urbana de Muribeca, Nordeste do Brasil. **Acta Botanica Brasilica** v.24, n.2, p.571-577, 2010; DOI: 10.1590/S0102-33062010000200026. Accessed in Jan. 16th, 2015.

OLIVEIRA, E. R.;MENINI NETO, L. Levantamento etnobotânico de plantas medicinais utilizadas pelos moradores do povoado de Manejo, Lima Duarte – MG. **Revista Brasileira de Plantas Medicinais** v.14, n.2, p.311-320, 2012; DOI: 10.1590/S1516-05722012000200010. Accessed in Jan. 16th, 2015.

PASA, M. C.; et al. Estudo etnobotânico na comunidade de Conceição-Açu (alto da bacia do rio Aricá Açu, MT, Brasil). **Acta Botanica Brasilica**, v.19, n.2, p.195-207, 2005. DOI: 10.1590/S0102-33062005000200001. Accessed in Jan. 16th, 2015.

PERONI, N.; et al. **Métodos ecológicos na investigação etnobotânica e etnobiológica: o uso de medidas de diversidade e estimadores de riqueza**. In: Métodos e técnicas na pesquisa Etnobiológica e Etnoecológica, Albuquerque U. (ed), Recife, PE: NUPPEA. 2010.

PRADO, G.; et al. Efeito da irradiação na microbiota fúngica de plantas medicinais. **Ciência Agrotécnica** v.33, n.5, p.1372-1378, 2009. DOI: 10.1590/S1413-70542009000500025. Accessed in January 16th, 2015.

PILLA, M. A. C.; et al. Obtenção e uso das plantas medicinais no distrito de Martim Francisco, Município de Mogi-Mirim, SP, Brasil. **Acta Botanica Brasilica** v.20, n.4, p.789-802, 2006. DOI: 10.1590/S0102-33062006000400005 Accessed in Jan. 16th, 2015.

PINTO, D. P. P.; et al. Conhecimento popular sobre plantas medicinais em comunidades rurais de mata atlântica – Itararé, BA, Brasil. **Acta Botanica Brasilica** v.20, n.4, p.751-62, 2006. DOI: 10.1590/S0102-33062006000400001. Accessed in Mar. 20th, 2015.

REITZ, P. R. **Flora Ilustrada Catarinense**. Fascículo Compostas. Itajaí: Conselho Nacional de Pesquisas – Instituto Brasileiro de Desenvolvimento Florestal. 1973

RODRIGUES, W. C. **DivEs** – Diversidade de Espécies v3.0 – Guia do Usuário. Entomologistas do Brasil. 2015. 33p. Available in: http://dives.ebras.bio.br. Accessed in Jan. 16th, 2015.

ROQUE, A. A.; et al. Uso e diversidade de plantas medicinais da Caatinga na comunidade rural de Laginhas, município de Caicó, Rio Grande do Norte (Nordeste do Brasil). **Revista Brasileira de Plantas Medicinais** v.12, n.1, p.31-42, 2010. DOI: 10.1590/S1516-05722010000100006. Accessed in Mar. 20th, 2015.

ROSSATO, A. E.; KRUGER, A. Z. As políticas de saúde para o uso de plantas medicinais e fitoterápicos na rede pública brasileira**. Revista Pesquisa e Extensão em Saúde** v.2, n.1, p.45-58, 2005.

SANTOS, F. S. D. dos. **Tradições populares de uso de plantas medicinais na Amazônia**. História Ciências da Saúde, Manguinhos v.6, p.919-939, 2000; DOI: 10.1590/S0104-59702000000500009. Accessed in Mar. 16th, 2015.

SOUZA, V. F.; LORENZI, H. **Botânica Sistemática. Guia ilustrado para identificação das famílias de Angiospermas da flora brasileira,** baseado em APG II. Nova Odessa, Instituto Plantarum de Estudos da Flora Ltda. 2005.

TOMAZZONI, M. I.; et al. Fitoterapia popular: a busca instrumental enquanto prática terapeuta. **Texto contexto enfermagem** v.15, n.1, p.115-121, 2006. DOI: 10.1590/S0104-07072006000100014.Accessed in Jan. 16th, 2015.

VELASCO, H.; DÍAZ de R. A. D. A. **La lógica de la investigación etnográfica**. Un modelo de trabajo para etnógrafos de la escuela. Madrid: Trotta. 1997.