Indian Journal of Traditional Knowledge
Vol 21(1), January 2022, pp 145-156

Intermedicality in official health contexts: Use of medicinal plants by the inhabitants of a city in Argentinean Patagonia

Irene Ferreras[a], Soledad Molares[a,b,*] & Viviana Hechem[a]

[a]Facultad de Ciencias Naturales y Ciencias de la Salud, Universidad Nacional de la Patagonia San Juan Bosco, Ruta Nacional N°259, km 16, Esquel (9200), Chubut, Argentina.

[b]Centro de Investigación Esquel de Montaña y Estepa Patagónica (CIEMEP), Consejo Nacional de Investigaciones Científicas y Técnicas, Roca 780, Esquel (9200), Chubut, Argentina.

E-mail: smolares@gmail.com

Received 14 August 2020; revised 14 November 2020

The aim of this study was to explore how the use of medicinal plants and biomedical resources varies over time among patients attending primary health-care centers in Esquel city (Argentinean Patagonia) as related to socio-cultural and environmental variables. Interviews were carried out with 79 patients and information was analyzed using ethnobotanical techniques. Seventy-six percent of informants said they use medicinal plants and drugs in a complementary manner. They were mostly youths of urban origin. Gastrointestinal disorders are mostly treated through this strategy, exotic plants being the most commonly used ones, together with analgesics and synthetic digestives. Conversely, elderly people of rural origin kept cultural rules that restrict the combined use of plants and drugs to some etiologies. These informants claim to use drugs to treat complex diseases such as diabetes, thyroidism, etc. Health centers are intermedicality spaces where rural and urban memories reactivate, and where therapeutic responses diversify among social segments.

Keywords: Biomedicine, Folk medicine, Mapuche pharmacopeia, Primary health care

IPC Code: Int. Cl.[22]: A61K 36/00, A61K 45/00

The use of medicinal plants is one of the main options for self-care and disease prevention, both in rural and in urban environments[1]. In cities, it merges with other resources of animal and mineral origin, as well as with religious services and pharmaceutical products. This set of options constitutes part of popular or folk medicine which, in one way or another, gives answers to the therapeutic needs of different socio-cultural segments[2-4].

The use of these alternative systems, which could be complementary to biomedicine -here defined as the hegemonic medical system based on the principles of western science- occurs even though there exist deep epistemological misunderstandings and inequalities regarding its power and influence[5]. According to Langdon and Garnelo (2017)[6], biomedicine services and drugs do not replace other therapeutic forms but coexist with them, to a greater or lesser extent, and their complementary use by the population relates to the search for better life quality and to a wish to participate more actively in health recovery.

Based on some studies carried out in Chilean populations, Citarella (1995)[7] describes three main patterns of medicinal plant use and biomedicine resources: 1) simultaneous use pattern, when patients complement biomedical system resources with plants from Mapuche pharmacopeia (main indigenous group from Argentinean and Chilean Patagonia), in order to enhance its effects, or to neutralize secondary effects of drugs; 2) sequential use pattern, when the dissatisfaction generated by the results of a medical system leads patients to resort to the other system and 3) exclusive use pattern, when patients choose the system which is coherent with their socio-cultural reality, or with their perception of etiology, signs and symptoms of the disease.

In the city area, preference to use biomedicine treatments and pharmaceutical resources, or the choice for alternative or complementary medicines is strongly influenced by numerous socio-cultural and environmental factors such as age, gender, socio-cultural roots, plant availability[4-5,8], as well as by the satisfaction generated by the official biomedical system[3,8-10]. In addition to this, there is the influence

*Corresponding author

of the herbal products market and mass media, which promote returning to complementary natural therapies, many of them based on medicinal plants[11,12].

Particularly, socio-cultural baggage, gender and age are important factors which determine the preference for one or the other system, as well as the perceptions of benefits or risks of its complementary use[5,13]. This could be especially remarkable in regions undergoing internal migratory processes, such as those which imply rural and indigenous population settling in the city[4,14,15].

Regarding gender, Medeiros *et al*.[5] found that women are generally more proactive than men in seeking for good health, as well as the main users of alternative and complementary medicines. The reasons for this behavior can be very variable, although cultural mandate is one of the most frequently mentioned factors[16].

As for socio-cultural baggage, Cimadevilla (2009)[17] pointed out that when farmers migrate and settle in a city, they generally try to solve their health problems by reproducing their knowledge associated with rural life, as well as by using identitary natural resources. However, this knowledge cannot always be adjusted or applied to the new urban context because of resources unavailability or because they are not legitimated by the official medical system. Exceptionally, some medicinal plants of cultural relevance can be obtained through barter or planting, or they can be replaced by globally distributed equivalent plants which, when resignified, may adjust to the needs of the cultural group[12].

In a gradual and more or less parallel way, some components and practices associated with rurality (gathering, farming) can be incorporated by the urban population; moreover, some species may enter the commercial circuit[4,9,11]. In cities, this process may result in a diversification of therapeutic options, which indicates urban ethnobotany dynamics[3,11,18]. Thus, it can be understood that the city is not the only agent having socio-environmental power of change, but that rural knowledge influx can favor urban knowledge hybridization[4,17,18].

The age of the inhabitants in relation to their cultural roots is another factor which may play an important role in their behaviors towards the quest for good health. Particularly elderly inhabitants of rural origin might keep more traditional knowledge about medicinal plants than younger ones who might tend to gradually abandon traditional methods and incorporate new urban resources, like those associated with biomedicine[5].

In cities, there are different intermedical spaces where rural and urban knowledge interactions as well as interchange of vegetal resources of different origin could be favored[19]. Primary health-care centers (CAPS by its initials in Spanish) could be key spaces in this sense[20]. In Argentina, CAPS are part of the country official biomedical system, having a wide medical coverage, particularly in periurban and rural environments. The associated use of modern and traditional medical services and the importance of medicinal plants in intercultural contexts has been highlighted in Latin America[20]. These results could be even more significant in medium-sized cities since they have wide and porous limits with rural areas[21], where groups having different cultural roots share official biomedical attention spaces, which could bring about knowledge on medicinal plants socialization, interchange and complementation[22].

In CAPS' context of a medium-sized city (Esquel, Chubut, 32.758 inhabitants) in Argentinean Patagonia, we asked ourselves the following questions: 1) Do patients attending CAPS use medicinal plants? If yes, which diseases do they use them for?; 2) Which species have the highest cultural importance and versatility of uses?; 3) Which are the main strategies to obtain them?; 4) Are there any differences in species richness and composition (native, exotic) among inhabitants having different age and cultural roots [neo-urban of rural origin (Mapuche) and urban inhabitants]?; 5) Which proportion of patients use medicinal plants and biomedicine drugs as a complementary resource?; 6) How do the different analyzed variables relate among themselves (strategies to obtain plants, kinds of disorder, biogeographic origin of plants, age of patients and cultural roots) and between them and use patterns of medicinal plants and drugs (complementary, non-complementary)?

Methodology

Study area and population

This study was carried out in Esquel (42°54' S and 71°18' W), Northwest of Chubut Province, Argentinean Patagonia (Fig. 1). This city is located in an Andean Precordillera valley, in a forest-steppe ecotone. Temperatures are about 2.2°C in winter and 14°C in summer. Average annual rainfall is 600 mm, concentrated mainly in winter[23].

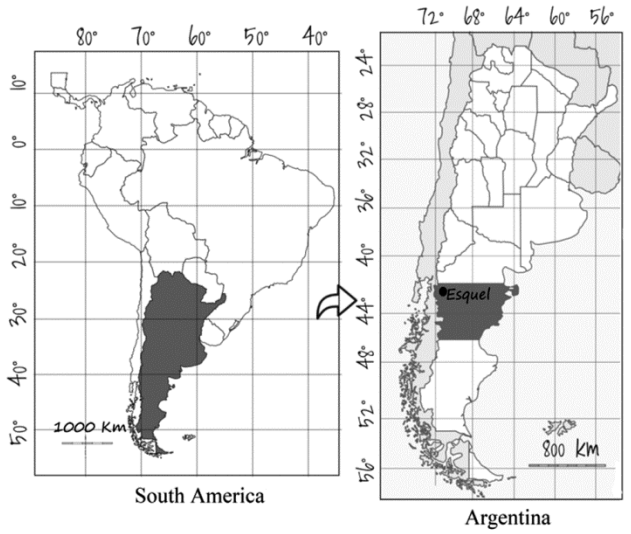

Fig. 1 — Map of the study area (Esquel, Patagonia, Argentina).

The most representative plant species in the area are: *Senecio filaginoides* DC., *Berberis* spp., *Adesmia volckmannii* Phil., *Pappostipa speciosa* (Trin. & Rupr.) Romasch., *P. humilis* (Cav.) Romasch. and *Poa ligularis* Nees ex Steud., which are characteristic of the graminous - shrubby steppe. In the most sheltered and/or wettest sites we find *Austrocedrus chilensis* (D. Don) Pic. Serm. & Bizzarri, *Nothofagus antarctica* (G. Forst.) Oerst., *Maytenus boaria* Molina and *Schinus patagonicus* (Phil.) I.M. Johnst. ex Cabrera., which are characteristic of the subantarctic area. Around the city, there are *Pinus* spp. plantations, while the exotic *Salix* spp. and *Populus* spp. grow along water courses.[21]

The population in Esquel is pluriethnical, having Welsh, Spanish, Syrio-lebanese and Mapuche origin. Mapuche is the largest native aboriginal group in Chubut Province, and it is estimated that about 78.6% of them are settled in urban areas[24]. The main traditional health practice in the rural areas around the city is the use of medicinal plants with the aid of prayers[25]. Most of the population speaks Spanish. Formal education comprises all levels and, in addition, there are institutions related to science and technological, agrarian and forestry development. The main socio-economical activities relate to commerce, public administration, tourism, and agrarian and forestry activities.

The public biomedical system is made up of one zonal hospital and seven primary-health care centers (CAPS). CAPS represent the most basic level of health care; mainly the inhabitants of suburban areas having low income and/or having no social insurance attend these centers whose main activities are prevention and treatment of diseases and common traumatisms, basic sanitation, mother and child care, sexual and (non) reproductive assistance and drug delivery. As in other Latin-American contexts[5], waiting rooms at CAPS are intercultural spaces where knowledge is shared while waiting for the doctors' attention.

Data collection

Informants were selected after an intentional sampling[12,26], trying to include the diversity of patients attending the seven CAPS in Esquel. This methodology recognizes the exploratory range of the present study and tries to get panoramic information for eventual deeper inquiries[27]. Thus, 10-12 patients from each CAPS were contacted and interviewed, sample saturation having been reached with 79 informants that is when the accumulation curve of medicinal species reached the plateau. All interviewed patients claimed they knew and used medical plants to prevent, cure, or alleviate ailments. Eighty percent of the informants were women since there is larger presence of women in health-care centers and they were more willing to participate in this study; these aspects were already noted by other authors[28].

Before starting the inquiry, and following the guidelines of the Code of Ethics of the International Society of Ethnobiology (ISE)[29], previous consent was obtained from the External Area Coordinator of Esquel Zonal Hospital, also from each Center Coordinator and from each patient to be interviewed. All interviews were semi-structured and the following variables were considered: medicinal plants richness known and used, strategies to obtain them, and diseases treated. Each patient was also asked about age, employment, place of origin [city/rural area (rural: when the informant defined him or herself as being Mapuche, related his/her childhood with rural area, or when he/she claimed to inhabit both, rural area and city)], and use of medicinal plants in relation to biomedicine drugs use (simultaneous, sequential or exclusive use[7]).

In order to identify the species used, visual resources (pictures and videos) were used during the interviews[5]; afterwards, common and scientific names were compared with those published in catalogs and reference publications[7,30,31]. Visits were made to some city herb shops to buy commercial samples for taxonomic determination. This non-conventional reference material[32] is kept at Esquel Patagonian

Mountain and Steppe Research Center (Centro de Investigación Esquel de Montaña y Estepa Patagónica -CIEMEP).

Records on liquid products, capsules or any other format of commercial administration (horse chestnut drops, musk rose oil, aloe vera cream, etc.) which did not constitute botanical whole or fragmented material were excluded from the analysis[33]. Native and naturalized species nomenclature follows Zuloaga *et al.*[34], while exotic cultivated species nomenclature follows TROPICOS[35]. Plants sharing the same common name due to their morphological, organoleptic and/or functional similitudes were grouped and considered as "plant complexes"[36].

Data analysis

Medicinal plants richness was estimated from the total number of species cited by all 79 informants. As a measurement of cultural importance, use consensus on each species was obtained through the formula: UC= (fi/N)*100, where fi is the number of persons who mentioned the species i, and N is the total number of interviewed persons. The UC was also calculated according to each cultural root category (N rural informants = 35, N urban informants = 44).

The utilitarian versatility of each species was estimated from the formula: VUi = ∑VUsi / ns, where VUsi= number of uses registered by informant i for species s; and ns = number of people mentioning species s.

Species richness and composition (native and exotic) was compared considering different cultural root categories (rural informants= 35, urban informants= 44) through non-parametric binomial test. Relationships between age and plant species richness (native and exotic separately) for each cultural root category (rural, urban), were studied using Spearman correlation test, so people older than 75 years old were not considered in order to lessen memory loss effect due to senility. All statistical tests were carried out with a 0.05 significance level[37].

In order to globally analyze the different study variables regarding patterns of use of medicinal plants and drugs of the biomedical system (simultaneous, sequential or exclusive), a multidimensional scaling analysis (MDS) was made. MDS provides a spatial arrangement of the analyzed variables as a whole, and shows the relative positions among themselves according to their degree of similarity, in this case according to the medicinal species shared. The variation proportion, which is explained by this arrangement, was measured with R^2 value (it varies between 0 and 1) and with the stress estimating the degree of adjustment of the created distances, whose good adjustment values must be less than 0.1[38].

The analysis categories for MDS were: 1- "patients who complement" (simultaneous and/or consecutive use patterns, with no restrictions), and "patients who do not complement" (exclusive use pattern); 2- "urban" and "rural" roots; 3- informants' age: "youths" (younger than 30 years), "adults" (between 30 and 55 years old) and "elderly" (older than 55 years old); 4- species richness cited by patient: "low" (up to 4 species) and "high" (5 or more species) (median value= 4 species); 5- medicinal categories: "analgesic-anti-inflammatory", "cardiovascular", "dermatological-cosmetic", "nervous system diseases", "respiratory", "antipyretic", "gastrointestinal", "genital-urinary", "gynecological-obstetric", "cultural syndromes" and "nutraceutic" (categories which have been mentioned less than 3 times were excluded from the analysis); 6- strategies to obtain them: "purchase", "barter", "farming", "gathering". 7- biogeographic origin of species: "native", "exotic".

All of the statistical analyses were carried out using SPSS 20.

Results and Discussion

Medicinal plants used by patients attending CAPS

Patients used 103 medicinal species and 7 plant complexes (Table 1). Among the main plant complexes there are commercial teas (digestives, relaxants, etc.); "burnt ashes", (made up of combustion residues from an indistinct mixture of woody species obtained from domestic wood-burning stoves; and "ñamkulawen" complex, which includes native species of the genus *Valeriana.*

Seventy-three percent of species is exotic to Patagonian territory, including flora specimens from the American Southern Cone such as *Alternanthera pungens* Kunth and *Peumus boldus* Molina, and also species from other continents (e. g.: *Tilia cordata* Mill.), some of which grow as adventitious around the study area (e. g.: *Mentha pulegium* L.). Exotic species predominance coincides with what was observed in different urban studies, and could relate to commercial and environmental availability, as well as to some advertising which exaggerates their virtues, among other reasons[3,11,12].

Table 1 — Medicinal plants used by patients of the Primary Health Care Centers (CAPS, by its initials in Spanish) of Esquel, Patagonia, Argentina. Reference: VUi= versatility of uses; UC= use consensus.

Species/ Voucher N°	Family	Origin	VUi	UC
Acantholippia seriphioides (A. Gray) Moldenke/CIEMEP1IF	Verbenaceae	Native	1.25	5.06
Adesmia boronioides Hook. f./ CIEMEP2IF	Fabaceae	Native	4.6	6.33
Allium cepa L. /CIEMEP3IF	Amaryllidaceae	Exotic	1.33	3.80
Allium sativum L. /CIEMEP4IF	Amaryllidaceae	Exotic	3	1.27
Aloe vera (L.) Burm. f. /CIEMEP5IF	Asphodelaceae	Exotic	1	3.80
Aloysia citriodora Palau/CIEMEP71IF	Verbenaceae	Exotic	1.25	5.06
Aloysia polystachya (Griseb.) Moldenke/CIEMEP72IF	Verbenaceae	Exotic	1.25	5.06
Alternanthera pungens Kunth/CIEMEP73IF	Amaranthaceae	Exotic	1.78	17.72
Apium australe Thouars/CIEMEP6IF	Apiaceae	Native	1	1.27
Apium graveolens L. /CIEMEP7IF	Apiaceae	Exotic	1	1.27
Arjona tuberosa Cav. /CIEMEP8IF	Schoepfiaceae	Native	1	1.27
Armeria maritima (Mill.) Willd. /CIEMEP9IF	Plumbaginaceae	Native	1	1.27
Artemisia absinthium L. /CIEMEP10IF	Asteraceae	Exotic	1.36	13.92
Artemisia vulgaris L. /CIEMEP11IF	Asteraceae	Exotic	1	1.27
Azorella prolifera (Cav.) G.M. Plunkett & A.N. Nicolas/CIEMEP12IF	Apiaceae	Native	1	1.27
Baccharis obovata Hook. & Arn. /CIEMEP13IF	Asteraceae	Native	1	1.27
Baccharis sagittalis (Less.) DC. /CIEMEP14IF	Asteraceae	Native	1	21.52
Baccharis spp. /CIEMEP15IF	Asteraceae	Exotic	1	10.13
Bauhinia forficata Link/CIEMEP74IF	Fabaceae	Exotic	2	1.27
Berberis microphylla G. Forst. /CIEMEP16IF	Berberidaceae	Native	1	3.80
Buddleja globosa Hope/CIEMEP17IF	Scrophulariaceae	Native	1.27	13.92
Calendula officinalis L. /CIEMEP18IF	Asteraceae	Exotic	1	1.27
Camellia sinensis (L.) Kuntz/CIEMEP75IF	Theaceae	Exotic	1.5	3.80
Centaurium cachanlahuen (Molina) B.L. Rob/CIEMEP19IF	Gentianaceae	Native	1	2.53
Chuquiraga avellanedae Lorentz/CIEMEP20IF	Asteraceae	Native	1	6.33
Cichorium intybus L. /CIEMEP21IF	Asteraceae	Exotic	1	1.27
Cinnamomum verum J. Presl/CIEMEP76IF	Lauraceae	Exotic	2	1.27
Citrus × limon (L.) Osbeck/CIEMEP22IF	Rutaceae	Exotic	1	1.27
Clematis montevidensis Spreng/CIEMEP23IF	Ranunculaceae	Exotic	1	1.27
Clinopodium darwinii (Benth.) Kuntze/CIEMEP24IF	Lamiaceae	Native	1	3.80
Complejo "carqueja"/No Voucher			1	1.27
Complex "ashes"/No Voucher			2	1.27
Complex "ñamkulahuen"/No Voucher	Valerianaceae	Native	4.1	12.66
Complex "sertal"/No Voucher			1	1.27
Complex “cachamay” /No Voucher			1	1.27
Complex “cholagogue"/No Voucher			1	1.27
Complex “tea mix”/No Voucher			1	1.27
Cucurbita pepo L. /CIEMEP77IF	Cucurbitaceae	Exotic	1	1.27
Cymbopogon citratus (DC.) Stapf/CIEMEP78IF	Poaceae	Exotic	2	1.27
Dichondra sp. /CIEMEP79IF	Convolvulaceae	Exotic	1	1.27
Diposis patagonica Skottsb. /CIEMEP25IF	Apiaceae	Native	1	1.27
Dysphania ambrosioides (L.) Mosyakin & Clemants/CIEMEP26IF	Chenopodiaceae	Native	1.58	21.52
Dysphania multifida L. /CIEMEP27IF	Chenopodiaceae	Exotic	1.5	2.53
Equisetum bogotense Kunth/CIEMEP28IF	Equisetaceae	Native	1.4	6.33

(*Contd*.)

Table 1 — Medicinal plants used by patients of the Primary Health Care Centers (CAPS, by its initials in Spanish) of Esquel, Patagonia, Argentina. Reference: VUi= versatility of uses; UC= use consensus. (*Contd*.)

Species/ Voucher N°	Family	Origen	VUi	UC
Equisetum giganteum L. /CIEMEP80IF	Equisetaceae	Native	1.25	5.06
Erodium cicutarium (L.) L'Hér. ex Aiton/CIEMEP29IF	Geraniaceae	Exotic	2.37	10.13
Eucalyptus sp. /CIEMEP30IF	Myrtaceae	Exotic	1.5	5.06
Fabiana imbricata Ruiz & Pav. /CIEMEP31IF	Solanacaeae	Native	1.04	30.38
Ginkgo biloba L. /CIEMEP81IF	Ginkgoaceae	Exotic	1	1.27
Grindelia chiloensis (Cornel.) Cabrera/CIEMEP32IF	Asteraceae	Native	1	2.53
Gunnera tinctoria (Molina) Mirb. /CIEMEP33IF	Gunneraceae	Native	1.83	7.59
Helianthus annuus L. /CIEMEP34IF	Asteraceae	Exotic	1	1.27
Hypericum perforatum L. /CIEMEP35IF	Hypericaceae	Exotic	1.5	2.53
Juglans regia L. /CIEMEP36IF	Juglandaceae	Exotic	1	1.27
Laurus nobilis L. /CIEMEP37IF	Lauraceae	Exotic	1.25	5.06
Lavandula angustifolia Mill. /CIEMEP38IF	Lamiaceae	Exotic	1	1.27
Linum usitatissimum L. /CIEMEP82IF	Linaceae	Exotic	1	1.27
Lomatia hirsuta (Lam.) Diels/CIEMEP39IF	Proteaceae	Native	2	1.27
Malus domestica Borkh. /CIEMEP40IF	Rosaceae	Exotic	1	1.27
Malva sylvestris L. /CIEMEP41IF	Malvaceae	Exotic	1.33	3.80
Marrubium vulgare L. /CIEMEP42IF	Lamiaceae	Exotic	1	7.50
Matricaria chamomilla L. /CIEMEP43IF	Asteraceae	Exotic	1.83	39.24
Melissa officinalis L. /CIEMEP44IF	Lamiaceae	Exotic	1.5	5.06
Mentha pulegium L. /CIEMEP45IF	Lamiaceae	Exotic	1.33	3.80
Mentha sp. /CIEMEP46IF	Lamiaceae	Exotic	1.39	29.11
Mentha sp.2/CIEMEP47IF	Lamiaceae	Exotic	2	1.27
Mentha x piperita L. /CIEMEP48IF	Lamiaceae	Exotic	2	1.27
Mentha x rotundifolia (L.) Hudson/CIEMEP49IF	Lamiaceae	Exotic	1	2.53
Nardophyllum bryoides (Lam.) Cabrera/CIEMEP50IF	Asteraceae	Native	2	1.27
Nicotiana glauca Graham/CIEMEP83IF	Solanacaeae	Exotic	1	1.27
Unidentified1/No Voucher			1	1.27
Unidentified2/No Voucher			1	1.27
Unidentified3/No Voucher			1	1.27
Unidentified4/No Voucher			1	1.27
Unidentified5/No Voucher			1	1.27
Unidentified6/No Voucher			1	1.27
Ochetophila trinervis (Gillies ex Hook. & Arn.) Poepp. ex Miers/CIEMEP51IF	Rhamnaceae	Native	1	1.27
Origanum vulgare L. /CIEMEP52IF	Lamiaceae	Exotic	1	5.06
Peumus boldus Molina/CIEMEP84IF	Monimiaceae	Exotic	1	32.91
Plantago lanceolata L. /CIEMEP53IF	Plantaginaceae	Exotic	1	5.06
Plantago sp. /CIEMEP54IF	Plantaginaceae	Exotic	1	1.27
Pluchea sagittalis (Lam.) Cabrera/CIEMEP85IF	Asteraceae	Exotic	1	1.27
Polygonum aviculare L. /CIEMEP55IF	Polygonaceae	Exotic	1	2.53
Quassia amara L. /CIEMEP86IF	Simaroubaceae	Exotic	1	2.53
Ribes cucullatum Hook. & Arn. /CIEMEP56IF	Grossulariaceae	Native	1	1.27
Ribes sp. /CIEMEP57IF	Grossulariaceae	Native	1	1.27
Rosa rubiginosa L. /CIEMEP58IF	Rosaceae	Exotic	3	6.33
Rosa sp./No Voucher	Rosaceae	Exotic	1	2.53
Rosmarinus officinalis L. /CIEMEP59IF	Lamiaceae	Exotic	1.81	13.92
Ruta chalepensis L. /CIEMEP60IF	Rutaceae	Exotic	1	6.33
Salvia hispanica L. /CIEMEP87IF	Lamiaceae	Exotic	1	2.53

(*Contd*.)

Table 1 — Medicinal plants used by patients of the Primary Health Care Centers (CAPS, by its initials in Spanish) of Esquel, Patagonia, Argentina. Reference: VUi= versatility of uses; UC= use consensus. (*Contd*.)

Species/ Voucher N°	Family	Origen	VUi	UC
Salvia officinalis L. /CIEMEP61IF	Lamiaceae	Exotic	1.57	8.86
Sambucus nigra L. /CIEMEP62IF	Adoxaceae	Exotic	1	1.27
Sedum telephium L. /CIEMEP63IF	Crassulaceae	Exotic	1	3.80
Senna alexandrina Mill. /CIEMEP88IF	Fabaceae	Exotic	1	1.27
Sesamum indicum L. /CIEMEP89IF	Pedaliaceae	Exotic	1	1.27
Silybum marianum (L.) Gaertn. /CIEMEP90IF	Asteraceae	Exotic	1	1.27
Smilax campestris Griseb. /CIEMEP91IF	Smilacaceae	Exotic	1	1.27
Solanum crispum Ruiz & Pav. /CIEMEP64IF	Solanaceae	Native	1	5.06
Solanum tuberosum L. /CIEMEP65IF	Solanacaeae	Exotic	1	1.27
Sonchus oleraceus L. /CIEMEP66IF	Asteraceae	Exotic	1	1.27
Tanacetum balsamita L. /CIEMEP67IF	Asteraceae	Exotic	1	1.27
Thymus vulgaris L. /CIEMEP68IF	Lamiaceae	Exotic	2	1.27
Tilia cordata Mill. /CIEMEP69IF	Malvaceae	Exotic	1	10.13
Urtica sp.1 /No Voucher	Urticaceae	Exotic	1	2.53
Urtica sp.2/No Voucher	Urticaceae	Exotic	2	1.27
Urtica sp.3/No Voucher	Urticaceae	Exotic	1.5	2.53
Verbascum thapsus L. /CIEMEP70IF	Scrophulariaceae	Exotic	1	1.27
Zea mays L. /CIEMEP92IF	Poaceae	Exotic	2	1.27
Zingiber officinale Roscoe/CIEMEP93IF	Zingiberaceae	Exotic	2	2.53

Medicinal uses

Medicinal plants are used to treat different diseases, gastrointestinal disorders being among those most frequently mentioned (202 records), followed by respiratory diseases (66) and cultural syndromes (48).

The highest frequency of gastrointestinal cites in Patagonian rural areas is explained as being a consequence of high refined flour and animal fat intake, low vegetable intake, and non-potable water consumption[36,40]. However, it is necessary to carry out specific studies on the effects of these factors or others in urban populations of the region.

Regarding plant use to treat respiratory diseases, it is worth noting that Patagonian populations live under extreme weather conditions since winters are long and cold. In addition to this, suburban population has no access to a natural gas network and is exposed to combustion particles and gas emanating from poorly efficient woody stoves, whose inhalation brings about severe consequences on the respiratory tract[21].

Cultural syndromes such as "empacho", "ojeadura", "susto", among others, are very frequently mentioned in our study as compared with other urban ethnobotanic studies[12]. These disorders have been recorded in Latin America since colonial times, and they are presently the result of indigenous and European heritages, which are indissolubly merged[41]. This is also reflected in our study case, considering that their treatment includes the combination of ritual practices and the use of aromatic species from European Mediterranean area (e. g.: *Laurus nobilis* L., *Rosmarinus officinalis* L., *Ruta chalepensis* L.) as well as of native species from Mapuche pharmacopoeia (e. g.: "ñankulawen" complex), prayers in "Mapuzungun" and also prayers to the Virgin and to Christian Saints[25,31,42]. The coexistence of an Ethnomedicine of Spanish-European roots with resources belonging to Mapuche herbolaria in the city, suggests interchange and resignification processes to adjust them to urban particularities[12,19], probably facilitated by continuous regional migratory movements[42]. This, far from being a static process, is relevant for the daily activities of the population still in contact with rural areas, given their role in connecting knowledge and resources between both contexts.

Cultural importance of the species

The species having the highest consensus values were *Matricaria chamomilla* L. (CU= 39%), *Peumus boldus* Molina (UC= 33%), *Fabiana imbricata* Ruiz & Pav. (UC= 30.4%), *Mentha* spp. (UC= 29), *Baccharis sagittalis* (Less.) DC. (UC= 21.5%) and *Dysphania ambrosioides* (L.) Mosyakin & Clemants (UC= 21.5%) (Table 1). The exotic species cited are of great medical importance at global and local levels;

the native ones, on the other hand, are featured resources of Mapuche pharmacopoeia[7,31,39]. In analysis of UC according to cultural roots, it was found that species with the highest cultural value among rural inhabitants were native or wild exotic: *Fabiana imbricata* Ruiz & Pav. (UC = 44.4), *Baccharis sagittalis* (Less) DC. (33.3), *Mentha* spp. (33.3), *Artemisia absinthium* L. (29.6) and *Dysphania ambrosioides* (L.) Mosyakin & Clemants (29.6). While among urban inhabitants, species with the highest UC were mostly exotic species: *Matricaria chamomilla* L. (44), *Peumus boldus* Molina (42), Mentha spp. (30) and *Alternanthera pungens* Kunth (20) and a single native: *Fabiana imbricata* Ruiz & Pav. (22).

The species having the highest versatility of uses (VUi) were *Adesmia boronioides* Hook. f. (VUi= 4.6) used for respiratory, gastrointestinal, cardiovascular, analgesic, anti-inflammatory, and others disorders; "ñankulawen complex" (VUi= 4.1) used for respiratory, metabolic disorders, analgesic, cultural syndromes and genital-urinary disorders; and *Erodium cicutarium* (L.) L'Hér. ex Aiton (VUi= 2.37) used for dermatological-cosmetic and gastrointestinal pains. (Table 1).

Strategies to obtain medicinal plants

Plant gathering and purchase are the most frequent obtention strategies, representing 41% and 43%, respectively, of total records.

Most gathering sites are located around the city and, to a lesser extent, in Subantarctic neighboring forests and Precordillera hills. Fifty-seven percent of collected species are native; among them we find *B. sagittalis*, "ñamkulawen" complex and *A. boronioides*. Although gathering plants is mostly associated with rurality[4], in this study case, where the borders between rural and urban areas are gradual, and where also many green spaces are accessible to the population, gathering is still in practice.

Medicinal plants can also be purchased in herbal shops, supermarkets and pharmacies, where most species, mainly exotics, can be bought (92% of species richness), the most frequently bought being *M. chamomilla*, *P. boldus* and *A. pungens*, either ground, in bulk or as tea bags. The importance of the purchasing strategy has already been noted in other urban studies[11,43]. This strategy allows to obtain plants which cannot be collected or cultivated for any reason, according to what is expressed in the following accounts: "*cedrón* (*Aloysia citrodora* Palau) *can be bought as tea, in the pharmacy. There are also plants, which is better, but they are not always available*" (E. E., 60 years old); "*ñamkulawen (Valeriana* spp.*) used to be collected in the field, but now everything is available here; also "palo piche" (F. imbricata) can be bought; some time ago, we could just easily collect it*" (R. P., 63 years old). Moreover, these accounts show an adaptation of sourcing strategies to the conditions emerging from the city, as a reconfiguration of medical resources which used to be rural but have become urban[17].

To a lesser extent, plants can also be obtained through farming, which represents 12% of total records, and they are mainly exotics (88%), among them *Mentha* spp., *R. officinalis* and *Salvia officinalis* L. Finally, there is barter (4% of records), which implies interchange of plant parts and knowledge among neighbors and family members who still live in rural areas where native species are still available (56% of total bartered species are native), such as *B. sagittalis*, *G. tinctorea* and *Solanum crispum* Ruiz & Pav.

Medicinal species (native and exotic) richness cited related to age and cultural roots

People having rural roots cite higher medicinal species richness than those of urban origin ($p<0.05$). On the other hand, urban informants cite higher proportion of exotic species ($p<0.05$), while people of rural origin cite as many native species as exotic ones ($p>0.05$).

Age of urban inhabitants is positively and significantly related to exotic species richness ($R^2=0.5$; $p<0.01$), but it does not present a significant relationship with native species richness ($R^2=-0.01$; $p>0.05$). Conversely, age of informants of rural origin is positively and significantly related to native species richness ($R^2=0.4$; $p<0.05$), but does not present a significant relationship with exotic species richness ($R^2=-0.6$; $p>0.05$).

Generally, people of rural origin have had the opportunity, during their childhood, to experiment with the environment where plants grow, and use them, sometimes as the only medical resource available[19,39]. For these informants, rural areas harbor experiences which endorse native medicinal plant use in the cities, constituting part of their biocultural memory. Conversely, urban youths, among them children and grandchildren of rural migrants claimed there is a tendency not to use native medicinal plants. According to Arias-Toledo (2009)[44], young people

who are born in the city, grow up in an environment having higher availability of biomedical care centers and lower availability of wild natural resources, which predisposes them to losing knowledge about native medicinal plants. So much so, that one participant (L.C., 40 years old) explained: *"yuyos (herbs) were prepared by mom and dad, they were elderly, ancient people. They had everything at home, in the field; they needed no doctor or anything but now* (in the city), *I can get only a few "yuyos" and I have to buy medicines*".

The complementary -or noncomplementary- use of medicinal plants and biomedicine drugs

Seventy-six percent of patients claimed they use biomedicine drugs and medicinal plants in a complementary way to treat their diseases at home (simultaneous and/or consecutive use, with no restrictions). These values are similar to those obtained by Burgos & Morales (2011)[8] who state that almost 65% of Mapuche rural population of Bío-Bío region (Chile), complements biomedical treatments with medical plants; the main justification being the non-contraposition of systems. R. (43 years old) claimed: *"herbs are all healthy medicine, they are not harmful as drugs"*; H.M. (39 years old) pointed out: *"you can take herbs if you have pills, herbs are taken after the meals, they have no effect on the pill"*. For most informants, the combination intends to potentiate and/or neutralize secondary effects of drugs, as indicated by Citarella (1995)[7].

The remaining 24% of informants claimed they do not complement medical systems: *"the pill is dangerous. If I have pill for a disease, I don't take "yuyos"* (N.F., 57 years old). In some other cases, the exclusive use of one system was due to the recommendation of an official health-care agent: "*The doctor at hospital banned me from using "yuyos", she said they are harmful. Now I don't take "yuyos"* (A., 63 years old). These patients consider it necessary to leave sometime between they use one medical system and the other: *"... yuyos* (medicinal weeds/herbs) *shall not be used when medicine* (drugs) *is taken. one thing or another, I never mix anything*" (T.N., 69 years old).

A global analysis of the relationships between socio-environmental variables and patterns of complementary and non-complementary use of medicinal plants and drugs

Most patients who complement medicinal plants and biomedicine drugs have urban origin (70%), are youths and adults (age average= 48 years old) (Fig. 2) and exotic species purchase being the strategy most related to this pattern ($p<0.05$). Gastrointestinal diseases were the most frequently treated through complementary use of plants and drugs (Fig. 2). The most frequently cited digestive plant species were *Matricaria chamomilla*, *D. ambrosioides*, *Mentha* spp. and *A. pungens,* which are taken alone or combined with "mate" (traditional Argentinian infusion with *Ilex paraguariensis*), ingested together with analgesics and synthetic digestives (normally capsules or tablets).

Non-complementary use of medicinal plants and drugs was associated with patients older than 55 years old having rural origin or close connection with rural areas (Fig. 2). These patients use exclusively medicinal plants or drugs, depending on the disease. To treat respiratory or genitourinary disorders they frequently collect and use native plants (e. g.: *Fabiana imbricata* "for the kidneys"; ñamkulawen complex "for the lungs", among others). When treating complex diseases, probably related to urban life, which have no response to traditional therapies (depression, diabetes, thyroidism, cholesterol, etc.), informants chose drugs indicated by doctors. So stated A.B.V. (62 years old): *"depending on the disease, I prefer herbs: for the liver, the kidneys. For thyroid I have no way to treat it: I come to see the doctor"*.

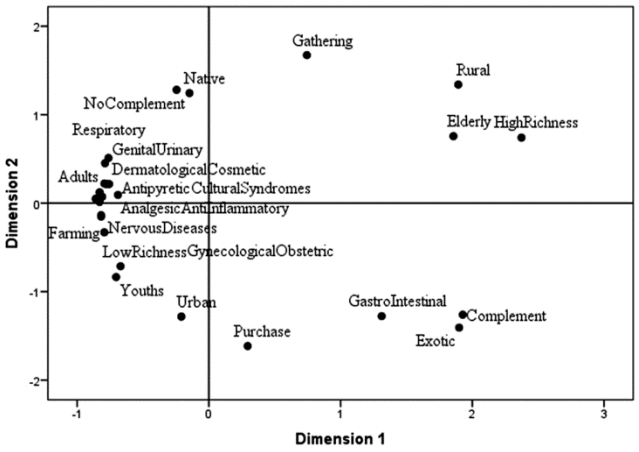

Fig. 2 — MDS of the analyzed variables (categories of medicinal use= analgesic-anti-inflammatory, cardio-vascular, dermatological-cosmetic, diseases of the nervous system, febrifuge, gastro-intestinal, genito-urinary, gynecological-obstetric, cultural syndromes, nutraceuticals; obtention strategies= purchase, farming, barter, gathering; cultural roots= urban, rural; age classes= young, adult, elderly; and biogeographic origin of plants= native, exotic), showing two groups in relation to the complementary or non-complementary use of plants and pharmaceuticals biomedicine.

Similarly, Sank and Hanazaki (2017)[13] found that complementary use of medicinal plants and biomedicines in two regions of Brazil having different degree of urbanization, were used to treat simpler diseases, while allopathic medicines were not combined with plants and used exclusively to treat disorders related to blood pressure, endocrine and nutritional diseases.

Conclusions

Patients attending CAPS in Esquel city (Argentinean Patagonia) use high richness of medicinal plants. Most of them use them as a complement of biomedicine drugs. In general, they are youths and adults mainly of urban origin, who obtain the plants through purchasing and, to a lesser extent, through gathering them. Gastrointestinal disorders are the most frequently treated ones through this combined strategy, using mainly exotic plants of global importance.

On the other hand, non-complementary use of systems is more frequent among people having rural roots. It is the eldest and/or those who lived in the field during their childhood who still keep usage rules and fears which restrict the combined use of plants and biomedicine drugs. They are also the ones citing the highest species richness of Mapuche plant pharmacopoeia, and who collect more plants in green areas around the city.

Globally known exotic species are widely used not only by informants having rural roots but also by those of urban origin, even to treat symbolic or cultural syndromes which, in this study case constitute one of the three categories most frequently cited (together with respiratory and gastrointestinal disorders). Native species, though more related with the rural patients group, are also mentioned among urban inhabitants, who use them for different therapeutic aims. These results suggest interactions among socio-cultural groups, entitling a bidirectional movement of plants and knowledge along time. In this sense, CAPS waiting rooms constitute key intermedicality spaces where rural and urban memories related to psycho-physic health are reactivated through socialization, including also new circulating knowledge (e. g. those coming from mass media, etc.).

Volpato *et al.*[45] proposed the existence of two main forces which influence traditional medical knowledge preservation of people migrating to cities: 1) development of strategies to obtain medical plants through farming, gathering or barter with family members living in their place of origin and 2) adaptation to the new medical system where plant resources which have been used in the past are now complemented and/or progressively replaced by substitutes of the new environment (species of the commercial circuit, etc.). In our study case, we could not only survey both strategies, but also verify that urban flora is enriched by rural influence, a local appreciation of Mapuche pharmacopoeia among patients not identified with the ethnicity.

However, when we analyze the patients' discourse, we find that medicinal plants use is sometimes underestimated by agents of the official system; this generates mutual tensions and misgivings. This occurs in a country where the biomedical system is favored by its hegemony in terms of propaganda and funding, which could jeopardize the permanence of therapeutic practices based on medicinal plants. This could impact on the empowerment which implies taking active decisions on their own health, considering that the structure and the way biomedicine drugs work is unknown.

Interchange of knowledge and plants among patients attending CAPS in Esquel occurs through a diversity of agents involved (urban and rural population, among others). At general public health-care level, this fact meets the therapeutic demands of the different population segments, so it may be probably participating of the health resilience of the population. In this sense, it is fundamental to recognize and value popular medical knowledge, as well as CAPS' importance as significant intermedicality spaces.

In accordance with García Canclini (2001)[46], "what is dangerous is not the interaction of systems having different symbolic base, but the fact that economic and political external factors, and also academic ones, may exclude the traditional systems from decision taking participative processes". In this sense, the present work highlights ethnobotanic aspects which have been little known to pluricultural urban populations in Patagonia, and constitutes an opportunity for dialogue among actors included in the different medical systems, and towards legitimation and respect for popular knowledge and higher access to health-care.

Finally, we consider it will be important to promote health professionals training to work considering the

existence of these complementary systems, fully respecting cultural diversity. Likewise, on account of possible antagonisms between plants and drugs effects, we consider it necessary to start and/or deepen phytochemical research on those plants having the highest cultural importance.

Acknowledgements

We acknowledge and thank the visited CAPS and their patients, doctors, administrative staff and nurses, who generously shared their knowledge with us. This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Authors' Contributions

IF, VH and SM conducted the interviews. IF and SM analyzed the data. SM and VH conceived the idea and supervised the study. SM finalized the manuscript. All authors have read and approved the final version of the manuscript.

References

1 Pochettino M L, Arenas P, Sánchez D & Correa R, Conocimiento botánico tradicional, circulación comercial y consumo de plantas medicinales en un área urbana de Argentina, *BLACPMA,* 7 (2008) 141-148.

2 Idoyaga Molina A, La selección y combinación de medicinas entre la población campesina de San Juan (Argentina), *Scr Ethnol*, 21 (1999) 7-33.

3 Hilgert N I, Higuera M D L & Kristensen M J, La medicina herbolaria en el contexto urbano. Estudio de caso en un barrio de la ciudad de Tandil, Argentina, *BLACPMA*, 9 (2010) 177-190.

4 Luján M C & Martínez G J, Dinámica del conocimiento etnobotánico en poblaciones urbanas y rurales de Córdoba (Argentina), *BLACPMA*, 16 (2017) 278-302.

5 Medeiros M P, Albuquerque U P, Oliveira D B A, Silva T C, Ferreira W S J, *et al*., What drives the use of natural products for medicinal purposes in the context of cultural pluralism?, *Eur J Integr Med*, 8 (2016) 471-477.

6 Langdon E J & Garnelo L, Articulación entre servicios de salud y "medicina indígena": reflexiones antropológicas sobre política y realidad en Brasil, *Salud Colectiva*, 13 (2017) 457-470.

7 Citarella L, Medicinas y culturas en la Araucanía, (Sudamericana, Santiago, Chile), 1995.

8 Burgos A N & Morales N A, Estudio cualitativo del uso de plantas medicinales en forma complementaria o alternativa con el consumo de fármacos en la población rural de la ciudad de Bulnes, Región del Bío-Bío, Chile, *BLACPMA*, 9 (2011) 377-387.

9 Idoyaga Molina A & Luxardo N, Medicinas no convencionales en cáncer, *Medicina (Buenos Aires),* 65 (2005) 390-394.

10 Chan K, An overview on safety issues of interactions between traditional herbal medicines and pharmaceutical medicines, *BLACPMA*, 7 (2008) 312-331.

11 Arenas P M, Cristina I, Puentes J P, Buet Costantino F, Hurrell J A & Pochettino M L, Adaptógenos: plantas medicinales tradicionales comercializadas como suplementos dietéticos en la conurbación Buenos Aires-La Plata (Argentina), *Bonplandia*, 20 (2011) 251-264.

12 Luján M C & Martínez G J, Etnobotánica médica urbana y periurbana de la ciudad de Córdoba, (Argentina), *BLACPMA*, 18 (2019) 155-196.

13 Sank S & Hanasaki N, The coexistence of traditional medicine and biomedicine: A study with local health experts in two Brazilian regions, *Plos One*, 12 (4) (2017).

14 Acosta M, Ladio A H & Vignale D, Plantas medicinales comercializadas en la ciudad de S. S. de Jujuy (Jujuy, Argentina) y su calidad botánica, *BLACPMA*, 16 (2017) 34-52.

15 Abreu D B O, Santoro F R, Albuquerque U P, Ladio A H & Medeiros P M, Medicinal plant knowledge in a context of cultural pluralism: A case study in Northeastern Brazil, *J Ethnopharmacol*, 175 (2015) 124-130.

16 Contreras D, Álamos M J, Chang M & Bedregal P, Opiniones sobre terapias complementarias por parte de los estudiantes de medicina de la Pontificia Universidad Católica de Chile, *Rev Med Chile*, 143 (2015) 1020-1027.

17 Cimadevilla G, De la dicotomía urbano - rural a la emergencia rurbana. Momentos y Movimientos, In: Relatos sobre la Rurbanidad, edited by G Cimadevilla & E Carniglia, (Universidad Nacional de Río Cuarto, Córdoba, Argentina), 2009, p. 163-186.

18 Kenbel C, Desacartonando tramas de sentido. La emergente rurbanidad desde la hibridez y la coexistencia, In: Relatos sobre la Rurbanidad, edited by G Cimadevilla & E Carniglia, (Universidad Nacional de Río Cuarto, Córdoba, Argentina), 2009, 149-162.

19 Kujawska M, Hilgert N I, Keller H A & Gil G, Medicinal plant diversity and inter-cultural interactions between indigenous Guarani, Criollos and Polish migrants in the subtropics of Argentina, *Plos One*, 12 (2017).

20 Amorozo M C M, Pluralistic medical settings and medicinal plant use in rural communities, Mato Grosso, Brazil, *J Ethnobiol*, 24 (1) (2004) 139-161.

21 Emery M R & P T Hurley, Ethnobiology in the city: Embracing the urban ecological moment, *J Ethnobiol*, 36 (4) (2016) 807–819.

22 Taboada Soldati G & Albuquerque U P, Ethnobotany in intermedical spaces: The case of the Fulni-ˆo Indians (Northeastern Brazil), *Evid-Based Compl Alt Med (eCAM)*, (2012) 1-13.

23 INTA (Instituto Nacional de Tecnología Agropecuaria), *Agrometeorología Esquel*, (Available from: https://inta.gob.ar/paginas/agrometeorologia-esquel), Accessed: December 2017.

24 SEP (Sistema Estadístico Provincial), *Informe acerca de la Población de Pueblos Indígenas del Chubut (Segunda Parte)*, (Available from: https://www.estadistica.chubut.gov.ar/home/), Accessed: September 2018.

25 Molares S & Ladio A, Plantas medicinales en una comunidad Mapuche del NO de la Patagonia Argentina: clasificación y percepciones organolépticas relacionadas con su valoración, *BLACPMA*, 7 (2008) 149-155.
26 Espinosa M M, Bieski I G C & Martins D T O, Sampling in ethnobotanical studies of medicinal plants, In: Methods and Techniques in Ethnobiology and Ethnoecology, edited by U P Albuquerque, C C L V Fernandes, R F Paiva Lucena & R R Nobrega Alves, (Springer, Pernambuco, Brazil), 2014.
27 Albuquerque U P & Alves R R N, Introduction to Ethnobiology, (Springer, Pernambuco, Brazil), 2016.
28 Kristoffersen A E, Stub T, Salamonsen A, Musial F & Hamberg K, Gender differences in prevalence and associations for use of CAM in a large population study, *BMC Complem Altern M*, 14 (2014) 463.
29 ISE (International Society of Ethnobiology), *Code of Ethics*, (Available from: http://www.ethnobiology.net/code-of-ethics), Accessed: October 2021.
30 Rapoport E H, Marzocca A & Drausal B, Malezas comestibles del Cono Sur y otras partes del planeta, (INTA, Buenos Aires, Argentina), 2009.
31 Kutschker A, Menoyo H & Hechem V, Plantas medicinales de uso popular en comunidades del oeste del Chubut. (INTA, Esquel, Argentina), 2002.
32 Ladio A & Molares S, Aspectos do estudo da dinâmica do uso de produtos etnobiológicos não tradicionais, In: Métodos e Técnicas na Pesquisa Etnobiológica e Etnoecológica, edited by U P Alburquerque & R F Paiva de Lucena, (NUPPEA, Recife, Brazil), 2010, 365-378.
33 Molares S, Arenas P & Aguilar A, Etnobotánica urbana de los productos vegetales adelgazantes comercializados en México DF, *BLACPMA*, 11 (2012) 400-412.
34 Zuloaga F O, Morrone O & Belgrano M, Catálogo de plantas vasculares de flora del Cono Sur, (Available from: http://www.darwin.edu.ar), Accessed December 2017.
35 TROPICOS, Missouri Botanical Garden, (Available from: http://www.tropicos.org), Accessed December 2017.
36 Molares S & Ladio A, Complejos vegetales comestibles y medicinales en la Patagonia Argentina: sus componentes y posibles procesos asociados, *BLACPMA*, 14 (2015) 237-250.
37 Conover W J, Practical Nonparametric Statistics, (Wiley & Son New York, USA), 1980.
38 Hair J F, Anderson R E, Tatham R L & Black W C, Multivariate data analysis, (Prentice Hall International, New York), 1998.
39 Molares S & Ladio A, Ethnobotanical review of the Mapuche medicinal flora: use patterns on a regional scale, *J Ethnopharmacol*, 122 (2009) 251-260.
40 Molares S & Ladio A, Chemosensory perception and medicinal plants for digestive ailments in a Mapuche community in NW Patagonia, Argentina, *J Ethnopharmacol*, 123 (2009) 397-406.
41 Campos Navarro R, El empacho: revisión de una enfermedad popular infantil chilena (1674-2014), *Rev Chil Pediatr*, 87 (2016) 63-68.
42 Molares S & Ladio A, Medicinal plants in the cultural landscape of a Mapuche-Tehuelche community in arid Argentine Patagonia: an eco-sensorial approach, *J Ethnobiol Ethnomed*, 10 (2014) 61.
43 Cambi N V & Hermann M P, El expendio de hierbas medicinales en el partido de Bahía Blanca, Argentina, *Acta Farm Bonaer*, 20 (2001) 33-37.
44 Arias Toledo B, Diversidad de usos, prácticas de recolección y diferencias según género y edad en el uso de plantas medicinales en Córdoba, Argentina, *BLACPMA*, 8 (2009) 389-401.
45 Volpato G, Godínez D & Beyra A, Uses of medicinal plants by Haitian immigrants and their descendants in the Province of Camagüey, Cuba, *J Ethnobiol Ethnomed*, 5 (2009) 16.
46 García Canclini N, Culturas híbridas: estrategias para entrar y salir de la modernidad, (Paidós Buenos Aires, Argentina), 2001.