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Research Article

Organic Cultivation and Use of Medicinal Plants in Latin America

Isabel Maria Madaleno

Portuguese Tropical Institute Rua António Galvão, 2-1B. 2780-047 Oeiras, Portugal Email: isabelmadaleno8@gmail.com

ABSTRACT: The struggle to maintain good health is twice as difficult among the less wealthy, underemployed and unemployed citizens. This contribution examines the organic cultivation of medicinal species in front and backyards and their uses in ten Latin American cities and metropolitan regions. Three main categories of afflictions are analyzed: (1) mild diseases, such as cough, colds, indigestion, conjunctivitis and diarrhoea; (2) the chronic health problems asthma and rheumatism; (3) serious troubles such as glaucoma, diabetes and cancer. Ancestral and domestic treatment practices using native and exotic flora are listed for each of the researched countries – Brazil, Chile, Argentina, Uruguay, Peru, Mexico, Cuba and Costa Rica – in order to provide a guide for interested peoples.

KEYWORDS: Latin America, traditional medicines, domestic medicines, ethnopharmacology, ethnomedicine

INTRODUCTION

Health is an essential quality-of-life factor,[1] as both the World Health Organization[2] and the Organisation for Economic Co-operation and Development[3] agree. In times of extraordinary financial difficulties,[4] prevention and treatment of serious diseases such as cancer and diabetes is clearly difficult. That's when traditional medicine steps in, as it is not only less expensive than conventional treatments, but it also regards the human being as a whole, seeking to give emotional and physical equilibrium to the person.[5] Aches and indispositions of any sort are treated differently according to several alternative therapies.[6] This paper will only address herbalism.

Plants are important sources of medicines.[7] During the past decade and a half, the Portuguese Tropical Institute (IICT) has conducted a good number of scientific missions to Latin America in order to collect information about medicinal plants and their utilization.[8–10] The aim of the project is to gather sources of ethnomedicines,[11] and undertake ethnobotanical and ethnogeographic studies designed to evaluate the consumption of plant species in cities of Latin America, both by less wealthy populations and plant therapy believers. The research hypotheses are twofold: (1) The preservation of garden biodiversity contributes for a healthy urban environment, which includes plant species used in domestic therapies; (2) Native and exotic species are valuable resources and important legacies for future generations, still in use today, because they constitute less expensive alternatives for the poor residents in the urban realm.

*Correspondence
E- mail: isabelmadaleno8@gmail.com
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MATERIALS AND METHODS

Data collection procedures used in current analysis has been described in previous work.[8–10] The current paper utilizes personal narratives of 1, 254 informants, 70% of which are urban gardeners and peri-urban farmers (see Table 1). The field-research was conducted in ten cities and metropolitan regions of eight Latin American countries, from 1998 to 2012. The focus groups further included formal and informal herb traders (about a quarter of all interviewed), as well as traditional healers, wild species collectors and herbal preparations consumers.

Face-to-face interviewing was the data-gathering technique[12] that used a sample questionnaire for each one of the three focus groups included in the table. When the

Table 1: Surveys conducted in Latin America

Metropolitan Regions (M.R.) and cities	Samples (n.)	Urban gardeners and farmers (%)	Herb traders (%)	Healers, wild species collectors (%)	Medicinal Species (n.)
M.R. of Belém, Brazil	570	97.3	2.3	0.4	140
M.R. of Santiago, Chile	132	84.1	15.1	0.8	70
M.R. of Central Mexico (C. de Mexico, Puebla and Cuernavaca)	100	42.0	48.0	10.0	70
M.R. of Lima, Peru	34	0.0	88.2	11.8	60
M.R. of Havana, Cuba	50	94.0	6.0	0.0	60
M.R. of San Jose, Costa Rica	43	69.7	28.0	2.3	60
S. Luis, Brasil	100	90.0	8.0	2.0	109
Río Cuarto, Argentina	100	80.0	17.0	3.0	125
Colonia del Sacramento, Uruguay	50	48.0	14.0	0.0	70
Iquique, Chile	75	64.0	30.7	5.3	84
Total or *average*	1,254	*70.0*	*25.7*	*3.6*	849

Source: Author's interviews.

informants were amenable to longer schedules, the author conducted the interview for a longer time or held extra sessions on different days. The basic questions related to the medicinal species cultivated, traded, recommended and consumed, their internal and external applications, and the use of irrigation and fertilization. In Argentina, Marcela Montero, from Rio Cuarto University participated in the process of data collection (2011), and in Santiago, Chile, Alberto Gurovich, professor at the University of Chile, also accompanied part of the interviews (2003, 2004, 2006). In the remaining cases, several local universities and scholars took part of the research process only in the species identification phase, because specimens are now part of local herbariums and collections, especially in Iquique, in the University of Arturo Prat (2012).

The information obtained through the 1,254 semi-structured interviews was grouped in three main categories of afflictions: (1) mild diseases, such as cough, colds, indigestion, conjunctivitis and diarrhoea; (2) chronic health problems (asthma, rheumatism); (3) serious troubles such as glaucoma, diabetes and cancer. The names of plants appearing in the samples were listed in three tables for this paper, following the methodology used in the study of Ghana by Sam et al.,[6] published in 2011. The plants collected were identified by their scientific names, following the Missouri Botanical Gardens[13] norm, then their vernacular equivalent was presented, per country researched, and finally the method of preparation was added.

RESULTS

The number of medicinal species recorded during field-work totaled 849 (Table 1). Almost one third (272) of these were common to more than two countries. As time evolved, the surveys showed that urban cultivation was augmenting, particularly from 2010 onwards, due to the economic depression.[4] In fact, both because of the size of the first Brazilian sample (1998) and the richness of the Amazonian environment where Belem is settled, over 90 species were counted then, summing 140 after the third mission in 2005 that added the plants traded in local markets.

In 2011, the Portuguese-Argentinean team registered 125 therapeutic species in a 245, 839 inhabitant's city, located in the temperate and dry pampas of the province of Cordoba.[14] In order to test the hypothesis that urban agriculture was in expansion, in 2012 the IICT decided to survey an unlikely farming city, the coastal desert Iquique, with the co-operation of Prof. José Delatorre Herrera, expert in agriculture in desert areas. Provisional results show that 21% of the species are gardened in tiny front yards. They are irrigated on a daily basis, sometimes more than once, with the sole exception of *Aloe vera*.

Urban and periurban agriculture (UPA) provides excellent opportunities for a healthy life and gardens are good places for children to grow up.[15, 16] Urban agriculture usually produces both food and medicinal species. In this paper, the focus are the gardens of health, defined as the spaces where residents grow plants that have therapeutic applications, ranging from pots, front and backyards, home gardens to vacant plots. The majority of these sampled spaces in Latin American cities and metropolitan regions are tended using organic inputs, varying from animal manure, to compost and vegetable leftovers. Only 8% of the urban gardeners and peri-urban farmers interviewed declared to use chemical fertilisers.

Havana, Cuba, had the highest (97.8%) organic fertilisation record,[9] and Santiago, Chile, the lowest, because 24% of the household plots used chemicals.[17] It is also surprising to recall that about one third of the cultivated plots were not fertilised at all. Therefore, growing medicinal plants is an inexpensive activity for urban residents that use them to improve their health, in case of sudden affections or chronic diseases. Barter and trade of seeds is quite common among neighbours, and municipal programs frequently sponsor compost tanks and possess nurseries that supply therapeutic species free of charge.[17–19] Other programs provide technical assistance even on the issue of the intercropping of repellent plants in gardens that prevent the application of pesticides.[8, 19]

International networks are operating for over a decade on larger programs intended to organise producers all over the world, facilitating their access to credit and agricultural extension services. The best examples, particularly successful in Latin America, are the Dutch Resource Centre on Urban Agriculture and Food Security (RUAF), and the Canadian International Development Research Centre (IDRC). Their innovative approaches to policy formulation and action planning have caught the attention of the World Bank and the United Nations, that now develop joint activities at regional and global levels.[20] The acceptance of organic farming inside the urban tissue is consensual because the activity not only improves food security and the health of the urban poor, but also contributes to build less polluted and more resilient cities, more aware of climate change and capable to cope with natural catastrophes.[21]

Data analysis

Besides the cultivated plant species, current research gathered recommendations of wild herb collectors, plant traders and traditional healers, adding to the domestic prescriptions the Latin American indigenous curative practices. This approach reflects a theoretical tendency of the Brazilian anthropologies of health, that stress the importance of qualitative methods in research on health issues, notwithstanding the coexistence of joint qualitative and quantitative techniques.[22]

Table 2 displays the results of medicinal plant uses to cure mild diseases. The table is descriptive and is supposed to illustrate, in a synthesized version, the prescriptions recommended in case of cough, catarrh, flu, throat aches, indigestion, diarrhoea, conjunctivitis, eye affections. A total of 55 families of botanical species are listed, top ranked by the Asteraceae. Lamiaceae goes second, because these species are herbs or small bushes that easily grow in pots and gardens and have recognised therapeutic properties. The profusion of syrups is remarkable, most of which are domestic prescriptions. Cubans, Mexicans and Brazilians use alternative medicines more frequently for cases of small affections. This is because of the scarcity of conventional medicinal drugs and also because the countries are rich with medicinal flora and have known ancestral Indian curative practices. Brazilians inherited the Portuguese tradition of self-medication.

Table 3 lists 40 botanical families used in such chronic diseases as rheumatism and asthma. The catalog is not exhaustive because this group corresponds to about 1/3 of the surveyed plant species. Prescriptions using alcohol are quite common among patients that have arthritis and rheumatic pains. Peru was the country where the IICT registered more recommendations for chronic diseases, followed by Brazil and then Mexico. Peru has the Andean *Minthostachys setosa* for rheumatism, using the tradition of the Incas, and the *Azorella compacta* from the Aymara culture. In all, the Andean species used against chronic and serious diseases are numerous and the research of their therapeutic properties constitutes an ongoing challenge. In Peru, the Asmachilca *Aristeguietia gayana* was recommended against asthma. Interestingly, despite having the same Aymara practices and ethnicity, Chileans from both Iquique and Santiago did not use this species.

The virtue of a comparative study lies in the possibility of putting localism at the service of abstraction.[23] *Peumus boldus* for instance, is a Chilean native I never saw cultivated in a Chilean garden. However, it is used in all Latin American countries and has widely recognised activity in case of liver problems and excess of uric acid.

Mexicans have native endemic species such as *Argemone mexicana* (Chicalote) and *Gnaphalium semiamplexicaule* (Gordolobo) that have been in use against asthma attacks from the days of the Aztecan dominion. Against rheumatic pains, the world known *Heterotheca inuloides* (Arnica) is the major recommendation, especially popular in Costa Rica. Amazonia has some of the best endemic species, with wide usage in chronic diseases. In S. Luis, located at the entrance of the tropical rainforest, residents prefer *Tagetes minuta* to rare *Caryocar brasiliense*, for use against rheumatic pains.

Not all interviewed Latin Americans believe in herbalism for the treatment of serious diseases such as cancer and diabetes, even less for glaucoma which is considered incurable. Among those that have less faith in the curative power of the flora are the Uruguayans and the Chileans. Table 4 lists over 100 plants recommended in

Table 2: Medicinal Plants and uses in case of mild diseases in Latin America

Plant species per FAMILY	Local name (country)	Indication	Method of preparation
ACANTHACEAE *Justicia pectoralis* Jacq.	Tilo (Cu), Tila Bolita (Me), Patco (Pe), Trevo-Cumaru (Br)	Cough, flu Indigestion	Infusion of the leaf, sweetened with honey. Infusion of the leaf together with *Bidens pilosa* 5 grams of leaf per cup of water.
Justicia spicigera Schltdl.	Muicle (Me)	Cough, flu Diarrhoea	Infusion of the leaf and stems. Maceration of the leaf.
ADOXACEAE *Sambucus nigra* L.	Sauco (Ch, Me, Pe, Cr), Sabugueiro (Br)	Diarrhoea	Infusion or concoction of the leaf and flower
AMARANTHACEAE *Amaranthus caudatus* L.	Caruru de Soldado (Br), Kiwicha (Pe), Bledo (Cu)	Diarrhoea	Concoction of the leaf and stem
ANACARDIACEAE *Anacardium occidentale* L.	Cajueiro (Br), Marañon (Cu, Cr)	Diarrhoea	Fruit juice, ingested. Bark and stems concoction or leaf infusion
Schinus molle L.	Pirul (Me), Mole (Ch, Pe), Aroeira Branca (Br)	Eye infections	The whole branch is boiled together with *Cortaderia atacamensis* and *Cestrum parqui*, applied in cataplasms
APIACEAE *Coriandrum sativum* L.	Cilantro or Coriandro (Ar)	Indigestion	Infusion of the fruit and seed. Infusion of the species together with *Lippia turbinata, Matricaria chamomilla*, *Mentha x piperita*, *Foeniculum vulgare* and *Minthostachys mollis*.
Pimpinella anisum L.	Anis (Ar, Cu)	Indigestion	Concoction of the seed.
ARECACEAE *Cocos nucifera* L.	Coqueiro (Br), Cocotero (Cu, Cr)	Diarrhoea	Coconut water ingested, 3 times a day.
ASTERACEAE *Achyrocline satureioides* (Lam.) DC.	Marcela Amarilla or Hembra (Ar, Ur)	Indigestion	Infusion of the flower together with *Peumus boldus*, *Lippia integrifolia* and *Mentha piperita.* Mate of the flower together with *Ilex paraguariensis, Baccharis trimera and Pimpinella anisum.*
Artemisia absinthium L.	Ajenjo (Me, Ch), Incienso ajenjo (Cu)	Diarrhoea Indigestion	Concoction of the leaf. Maceration of the flower in white wine. Infusion of the leaf.
Artemisia mendozana DC.	Certal or Sertal (Ar)	Indigestion	Infusion of the leaf
Artemisia mexicana Willd. ex Spreng.	Estafiate (Me)	Indigestion Diarrhoea	Infusion of the plant, 2 meals. Concoction of the plant together with *Matricaria chamomilla*, boiled for 5 minutes.
Baccharis trimera (Less.) DC.	Carqueja (Ar, Br, Ur)	Indigestion	Infusion of the leaf and stem.
Bidens pilosa L.	Picão (Br), Romerillo (Cu), Aceitilla (Me), Amor seco (Pe)	Flu Cough Indigestion	Concoction of the leaf together with *Citrus aurantium* leaf. Concoction of the leaf together with *Cissus sicyoides*.Infusion of the flower and leaf.
ASTERACEAE *Brickellia cavanillesii* (Cass.) A. Gray	Prodigiosa (Me)	Indigestion Diarrhoea	Infusion of the leaf. Infusion of the whole species.
Calendula officinalis L.	Mercadela (Pe, Me, Cr), Caléndula (Cu, Ar)	Cough Indigestion	Infusion of the root. Infusion of the flower and leaf.
Chuquiraga spinosa Less.	Huamampinta (Pe)	Conjunctivitis	Infusion of the plant to wash the eyes
Conyza bonariensis (L.) Conquist	Carnicera (Ur)	Indigestion	Infusion of the leaf. Infusion of the species leaves together with the leaf of *Malva parviflora*.
Cynara scolymus L. Cynara cardunculus var. Scolymus (L.) Fiori	Alcachofra (Br, Me, Pe, Cr), Alcachofra (Ar)	Indigestion	Infusion of the leaf together with *Peumus boldus*.
Eupatorium ayapana Vent.	Japana Branca (Br), Ayapana (Pe)	Cough, flu	Syrup of the leaf squeezed together with condensed milk. Syrup of the leaf together with the sap of *Hymenaea courbaril* and *Hancornia amapa*, with honey. Infusion of the leaf, ingested or in baths.
Eupatorium triplinerve Vahl	Japana vermelha (Br)	Cough Flu	Syrup of both species of Japana, with honey. Infusion of both Japana leaves.
Eupatorium villosum Sw., E. *cubense* DC.	Abre Camino (Cu), Abre Caminho (Br)	Cough, flu	Concoction of the leaf. Concoction of the leaf together with *Aeolanthus suavis*, in baths
Gnaphalium semiamplexicaule DC.	Gordolobo (Me)	Cough	Syrup of the plant species plus *Bougambillea spp.* Flower and honey. Other prescription adds Eucalyptus leaves. Syrup of the flower and stems with honey and lemon drops.

Gnaphalium viravira Molina	Vira Vira (Ch, Pe)	Cough	Infusion of the flower. Syrup of the leaf and flower with honey.
Matricaria chamomilla L.	Manzanilla (Ar, Cu, Cr, Ch, Me, Pe, Ur) Camomila (Br)	Indigestion	Concoction of the whole plant species together with root, boiled for 3 minutes. Or: Infusion of the leaf and flower, after meals.
		Conjunctivitis	Infusion of the leaf and flower, together with flowers of *Rosa* x *centifolia*, to wash the eyes.
		Diarrhoea	Infusion of the flower and leaf together with the leaf and stems of *Pimpinella anisum*.
Mikania lindleyana DC., *M. guaco* Bonpl., *M. laevigata* Sch. Bip. ex Baker	Sucurijú (Br), Guaco (Cr, Cu, Pe, Ur)	Cough Diarrhoea	Infusion of the leaf, twice a day. Concoction of the leaf.
Neurolaena lobata (L.) Cass.	Gavilana (Cr, Pe), Victoriana (Cu)	Indigestion Diarrhoea	Infusion of the leaf, stem and flower. Concoction of the whole plant.
Salvia officinalis L.	Salvia (Ar, Cr, Cu, Pe, Ch, Me, Ur), Salvia (Br)	Flu	Infusion of the leaf.
Tanacetum parthenium (L.) Sch. Bip. , *Tanacetum vulgare* var. *crispum* L.	Santa Maria (Me), Pluma (Br), Altamisa (Cr), Tanaceto (Cu, Ch), Palma Imperial (Ur), Hierba de Santa Maria (Pe)	Cough Indigestion	Concoction of the whole species in 2 litters of water. Infusion of the leaf, 3 times a day.
Taraxacum officinale F.H. Wigg.	Diente de león (Ch, Cr, Pe, Me, Cu), Dente de Leão (Br)	Indigestion	Ingestion in salads for better digestion.
Tussilago farfara L.	Tusilago (Ar, Ch, Pe)	Cough	Infusion of the flower.
BERBERIDACEAE *Berberis buxifolia* Lam., *B. ruscifolia* Lam.	Quebrachillo (Ar)	Indigestion	Infusion of the leaf and stems.
CARICACEAE *Carica papaya* L.	Mamoeiro (Br)	Diarrhoea	Infusion of the leaf together with *Plectranthus ornatus* and *Vitex agnus-castus* leaves.
CARYOCARACEAE *Caryocar brasiliense* Cambess.	Pequi or Piqui (Br)	Bronquitis, catarrh	Concoction of the pressed and toasted nut. 3 drops of the oil in a *Cymbopogon citratus* infusion, against cough and strong catarrh.
CELASTRACEAE *Maytenus ilicifolia* (Schrad.) Planch.	Congorosa (Ur)	Indigestion	Concoction of the species, ingested
COMMELINACEAE *Commelina erecta* L.	Flor de Santa Lucía (Ar)	Conjunctivitis	Juice of the flower in eye drops.
CRASSULACEAE *Bryophyllum calycinum* Salisb.	Santa-Quitéria or Pirarucu (Br), Hoja del Aire (Cr, Pe), Prodigiosa (Cu)	Indigestion and diarrhoea Cough	Concoction of 2 to 3 leaves per half a litter of water. Syrup of the leaf with water and sugar.
CUNONIACEAE *Weinmannia pinnata* L.	Arrayán Blanco (Cr), Oreganillo (Cu)	Diarrhoea	Concoction of the leaf
CUPRESSACEAE *Cupressus lusitanica* Mill.	Ciprés (Cr, Cu, Pe), Cipreste (Br)	Diarrhoea	Infusion of the leaf
ELAEOCARPACEAE *Aristotelia chilensis* (Molina) Stuntz	Maqui (Ch)	Diarrhoea Throat pains	Infusion of the fruit. Infusion of 2/3 leaves per cup of water.
EQUISETACEAE *Equisetum giganteum* L., *E. chilense* L., *E. arvense* L.	Cola de caballo (Ar, Ch, Cr, Me), Cana de Jacaré (Br)	Indigestion	Concoction of the stems.
EPHEDRACEAE *Ephedra triandra* Tul.	Pico de Gallo (Ar)	Rheumatism	Concoction of the stems, ingested.
EUPHOBIACEAE *Euphorbia hirta* L.	Tapón (Cu), Acurauzinho (Br), Golondrina (Pe)	Diarrhoea Indigestion, Eye inflamation	Concoction of the leaf. Infusion of the leaf. Infusion of the leaf, to wash the eyes.
Jatropha dioica Cerv.	Sangre de Drago (Me)	Conjunctivitis	Concoction of the bark and stems, to wash the eyes.
FABACEAE *Cassia reticulata* Willd.	Saragundí (Cr), Sapechihua (Pe)	Indigestion	Infusion of the leaf
Dalbergia subcymosa Ducke	Verónica (Br), Palo Santo (Pe)	Diarrhoea	Concoction of the bark, ingest a cup. Maceration of the bark
Eysenhardtia polystachya (Ortega) Sarg.	Palo Azul or Dulce (Me)	Conjunctivitis Cough, flu	Concoction of the trunk, to wash the eyes. Concoction of 20 gr. per 1 l. of water.
Hymenaea courbaril L.	Guapinol (Cr), Jatobá (Br), Azucar Huayo (Pe)	Diarrhoea Cough	Concoction of the bark, root and leaf. Syrup of the bark and stems with honey.

(continued)

Plant species per FAMILY	Local name (country)	Indication	Method of preparation
GENTIANACEAE *Gentiana gilioides* Gilg	Nencia (Ar)	Indigestion	Infusion of the leaf and stems.
IRIDACEAE *Eleutherine plicata* Herb.	Marupazinho (Br)	Diarrhoea	Concoction of the bulb, before meals, recommended to children
LAMIACEAE *Agastache mexicana* (Kunth) Lint & Epling	Toronjil (Me)	Indigestion	Concoction of the variety Hernandiana (red flowers), sweetened with honey, also good against ulcers. Infusion of the variety Xolocotziana (white flower).
Coleus barbatus (Andrews) Benth., *Plectranthus barbatus* Andrews	Anador (Br), Corazón de Jesús (Pe)	Indigestion	Infusion of the leaf together with *Mentha piperita*, sweetened with honey, after meals.
Hyptis americana (Poir.) Briq. *Hyptis suaveolens* (L.) Poit.	Oregano de la Tierra (Cu, Cr, Me, Pe)	Catarrh	Juice of the fried leaf, for children. Infusion of 2 leaves with *Citrus sinensis*.
		Cough	Syrup of the leaf with Eucalyptus and honey. Concoction of the leaf (2–3), per cup of water, boiled for 2 min.
		Indigestion, diarrhoea	Infusion of the leaf and stems.
Hyptis mutabiles Epling.	Salvia (Ar)	Cough	Infusion of the leaf.
Marrubium vulgare L.	Marrubio (Me, Pe, Cu), Hortelã-Grande (Br)	Flu Diarrhoea	Inhalation of the flower infusion Concoction of the whole species
Mentha citrata Ehrh., *M. arvensis* L.	Hierbabuena (Me, Cr, Pe), Menta (Ch, Ar)	Indigestion, flu	Infusion of the leaf (4/8) per cup of water, after lunch.
		Cough	Syrup of the leaf and stems with lemon and honey. Infusion of 2 fresh leaves.
Mentha x rotundifolia Hudson, *M. x piperita* L., *M. viridis* (L.) L.	Menta (Ur, Cu, Cr), yerbabuena or hierbabuena (Ar), Hortelã-Pimenta (Br), Menta americana (Cu)	Diarrhoea Indigestion Stomach aches	Infusion of the leaf. Infusion of the leaf together with *Matricaria chamomilla* and *Peumus boldus* leaves. Infusion of ¾ leaves, to wean babies.
Mentha spicata L.	Vick (Br), Hierbabuena (Me, Cr, Pe), Menta Jamaicana (Cu)	Flu, cough Indigestion, diarrhoea	Infusion of the leaf Concoction of the leaf
Minthostachys mollis (Kunth) Griseb.	Peperina (Ar)	Indigestion	Infusion of the flower, leaf and stems.
Ocimum basilicum L.	Manjericão (Br), Albahaca (Ar, Ch, Me, Pe, Cr, Cu)	Flu Throat pains Diarrhoea	Inhalation of the powered leaf. Infusion of the leaf and flower, 30gr per l. of water, in gargles. Concoction of the flower (5 gr) per cup of water, boiled 5 min.
Origanum vulgare L.	Oregano (Ar)	Indigestion	Infusion of the leaf.
Plectranthus neochilus Schltr., *P. ornatus* Codd	Boldo rasteiro (Br)	Indigestion	Infusion of the leaf.
Rosmarinus officinalis L.	Romero (Me, Pe, Cu, Cr, Ch, Ar, Ur), Alecrim (Br)	Cough Catarrh	Concoction of the species Infusion of the leaf, ingested hot.
Salvia lavanduloides Kunth, *S. officinalis* L.	Salvia (Ar, Cr, Cu), Poleo (Pe, Ch, Me, Ur), Salvia (Br)	Flu, indigestion Cough, catarrh	Place 2 leaves with the shape of a crucifix at the bottom of a cup of coffee and ingest at once. Infusion of 1 leaf together with *Bidens pilosa* leaf.
Salvia microphylla Kunth.	Mirto (Me, Cr)	Diarrhoea	Infusion of the species
Thymus vulgaris L.	Tomillo (Ur)	Catarrh	Concoction of the species
Vitex agnus-castus L.	Alecrim or Pau de Angola (Br), Sauzgatillo (Pe)	Cough	Juice of pressed leaf in water, ingested.
LAURACEAE *Cinnamomum zeylanicum* Blume	Caneleira (Br), Canela de Ceilán (Me, Pe, Ch, Cu, Cr, Ar)	Indigestion	Infusion of the bark.
Laurus nobilis L.	Laurel (Ch, Me, Pe, Cu), Louro (Br)	Indigestion	Infusion of the leaf. Concoction of the dried leaves (4 gr), plus *Citrus aurantium* fruit peel (8 gr), boiled for 15 minutes.
		Cough	Syrup of 3 leaves with honey.
Persea Americana Mill.	Abacateiro (Br), Palto or Palta (Ar, Ch, Ur, Me, Pe), Aguacate (Cr, Cu)	Indigestion Flu, cough	Concoction of the leaf. Syrup of 1 leaf, plus another of *Laurelia sempervirens,* 1 of Eucalyptus, 1 of *Hibiscus* spp. and the juice of 1 lemon with honey.
LYTHRACEAE *Cuphea aequipetala* Cav.	Hierba del Cancer (Me)	Diarrhoea	Concoction of the species

Punica granatum L.	Granado or Granada (Ar, Cr, Cu), Romã (Br)	Diarrhoea	Concoction of the fruit peel, ingested. Concoction of the fruit peel and tree bark.
		Throat pains	Concoction of the fruit peel, in gargles.
		Catarrh	Infusion of the leaf.
MALPIGHIACEAE *Byrsonima crassifolia* (L.) Kunth	Nance (Cr), Murici (Br), Nanchi (Me)	Indigestion	Concoction of the bark and flower.
		Diarrhoea	Raw fruit,
MALVACEAE *Althaea rosea* (L.) Cav.	Malva Rosa (Ch, Pe), Vara de San José (Me)	Cough, catarrh, flu	Syrup of 10/20 gr. of leaves, with honey. Infusion of the leaf with *Tussilago farfara*.
Gossypium herbaceum L.	Algodoeiro (Br), Algodonero (Ch, Cr, Cu, Me, Pe)	CoughThroat pains	Syrup of the leaf together with lemon and honey. One soup spoon in fast.Infusion of the leaf and flowers.
Hibiscus elatus Sw., *Maga cubensis* Britton & P. Wilson	Majagua (Cu)	Cough, catarrh	Syrup of the flower, with honey.
Hibiscus rosa-sinensis L.	Mar Pacífico (Cu, Cr), Tulipán (Me), Rosa de China (Ch, Pe)	Cough	Syrup of the flower with *Hyptis americana* leaf and honey.
Malva parviflora L *, M. sylvestris* L.	Malva (Ar)	Catarrh	Infusion of the leaf and flower.
Sphaeralcea bonariensis (Cav.) Griseb.	Malvavisco (Ar)	Catarrh	Infusion of the leaf and flower.
MELIACEAE *Carapa guianensis* Aubl.	Andiroba (Br), Najesí (Cu)	Diarrhoea	Concoction of the bark
Melia azedarach L.	Paraíso (Cu, Me), Flor de Paraíso (Pe), Miro Tahiti (Ch)	Flu Diarrhoea	Infusion of the leaf. Concoction of the leaf.
MONIMIACEAE *Peumus boldus* Molina	Boldo (Ch, Me, Pe, Br, Ur, Ar)	Indigestion	Infusion of the leaf dried or fresh
Pimenta dioica (L.) Merr.	Jamaica (Cr, Me), Pimienta (Cu)	Indigestion	Infusion of the leaf.
MYRTACEAE *Blepharocalyx salicifolius* (Kunth) O. Berg	Arrayán (Ur)	Indigestion	Infusion of the leaf.
Eucalyptus cinerea F. Muell. ex Benth., *E. globulus* Labill., *E. citriodora* Hook.	Eucalipto (Ar, Cu, Cr, Ch, Me, Pe, Br, Ur)	Flu, cough	Concoction of the leaf, ingested or in inhalation.
Eugenia uniflora L.	Pitanga (Ur, Br), Ñangapiri (Ar)	Diarrhoea, indigestion	Infusion of the leaf
Psidium guajava L.	Goiabeira (Br)	Diarrhoea	Concoction of the leaf
MUSACEAE *Musa paradisiaca* L.	Platano (Me, Cu, Cr), Banana (Br)	Cough, flu Diarrhoea	Concoction of the leaf. Ingestion of the fruit.
OLEACEAE *Fraxinus americana* L.	Fresno (Ar)	Flu	Concoction of the bark and leaf
ONAGRACEAE *Fuchsia magellanica* Lam.	Chilco (Ch)	Indigestion	Infusion of the flower.
PAPAVERACEAE *Argemone mexicana* L.	Chicalote (Me), Cardo Blanco (Pe), Cardo Santo (Cr, Cu)	Diarrhoea Eye affections, cataracts	Infusion of the leaf. Concoction of the flower and leaf.
PASSIFLORACEAE *Passiflora caerulea* L.	Mburucuyá (Ar, Ur)	Indigestion	Infusion of the leaf
PHYTOLACCACEAE *Petiveria alliacea* L.	Mucuracá (Br), Anamú (Ar, Cu), Mucura Hembra (Pe), Hierba de Zorrillo (Cr, Me)	Flu	Concoction of the leaf to lower the fever.
PIPERACEAE *Piper methysticum* G. Forst	Kava-Kava (Br)	Eye affections	Concoction of the bark, to wash the eyes.
PLANTAGINACEAE *Plantago major* L.,	Llantén (Ch, Pe, Cr, Cu, Ar, Me, Ur), Tansagem (Br).	Indigestion	Concoction of the leaf.
P. lanceolata L.	Siete Venas (Ch)	Diarrhoea	Infusion of the leaf.
POACEAE *Cymbopogon citratus* (DC.) Stapf	Yerbaluisa (Ar, Ch, Pe), Capim Santo (Br) Té Limon (Me, Ur), Zacate Limón (Cr), Caña Santa (Cu)	Indigestion, flu Cough	Infusion of the leaf Concoction of the leaf
Zea mays L.	Choclo (Ch), Maiz (Ar, Pe, Me, Cr, Cu)	Diarrhoea	Cooked maize.
POLYPODIACEAE *Polypodium aureum* L., *Phlebodium aureum* (L.) J. Sm.	Calaguala (Cr), Helecho Pata de Conejo (Me)	Diarrhoea	Infusion of the stems and leaf.

(continued)

Plant species per FAMILY	Local name (country)	Indication	Method of preparation
QUILLAJACEAE *Quillaja saponaria* Molina	Quillay (Ch), Quillaya (Cr)	Catarrh	Concoction of 10 gr. or 25 sticks of the bark, boiled for 10 min.
ROSACEAE *Prunus capuli* Cav.	Capulí or Capulin (Me, Pe)	Cough	Ingestion of the fruit. Syrup of the leaf after boiled in water, with sugar and cinnamon.
Rosa x *centifolia* L.	Rosa de Cien Hojas (Cr, Pe), Rosa de Castilla (Me)	Eye inflamation	Concoction of the flower, boiled for 2 min., to wash the eyes.
Rubus adenotrichus Schldl.	Zarzamora (Cu, Me, Ch)	Diarrhoea	Ingestion of the fruit.
Sanguisorba minor Scop.	Pimpinela (Pe), Ensalada Italiana (Cu)	Throat pains Diarrhoea	Concoction of the leaf and stems Concoction of the whole species, 3 times a day.
RUBIACEAE *Cinchona officinalis* L.	Cascara sagrada (Me), Quina (Ch, Br)	Indigestion	Concoction of the bark, boiled for 5 min.
Hamelia patens Jacq.	Ballentilla (Me), Ponasí (Cu), Benzeynuca (Pe), Fosforillo (Cr)	Diarrhoea	Infusion of the leaf
RUTACEAE *Citrus aurantiifolia* (Christm.) Swingle	Limón (Cr, Pe), Limón Criollo (Cu)	Flu Eye inflammation	Infusion of the flower or leaf. Juice of the fruit in eye drops.
Citrus x limon (L.) Osbeck	Limón (Ar)	Indigestion	Lemonade ingested.
Citrus medica L.	Limón (Pe, Ch, Me), Limón Persa (Cu)	Flu Throat pains	Concoction of the leaf and stem Lemon juice, ingested hot
Citrus reticulata Blanco	Mandarina (Cu, Me)	Catarrh Indigestion	Concoction of the leaf Infusion of the flower
Citrus sinensis (L.) Osbeck, *C. aurantium* L., *C. vulgaris* Risso	Laranjeira (Br), Té Naranjo (Ch, Me), Naranja de China (Cu), Naranja Dulce and Agria (Cr, Pe), Naranjo (Ar, Ur)	Indigestion Flu Diarrhoea	Infusion of the fruit peel, species *aurantium*, 2–8 gr per 1 l. of water. Mate of *Ilex paraguariensis* with the peel of the fruit of the 3 species.Infusion of the leafInfusion of the flower
Ruta graveolens L.	Ruda (Ar, Ch)	Indigestion	Infusion of the leaf and stem.
SALICACEAE *Salix humboldtiana* Willd., *S.chilensis* Molina	Sauce Chileno Llorón (Ch, Me, Pe, Cu, Cr), Salgueiro-Chorão (Br)	Diarrhoea	Concoction of the bark
SANTALACEAE *Jodina bonariensis* (DC.) Kuntze, *J. rhombifolia (*Hook. & Arn.) Reissek	Sombra de Toro (Ur)	Indigestion, diarrhoea	Infusion of the leaf
SCROPHULARIACEAE *Euphrasia officinalis* L.	Eufrásia or Consolo-da-Vista (Br)	Eye affections	Concoction of 1 soup spoon of the flower per glass of water, to wash the eyes or in eye drops.
Verbascum thapsus L.	Ambay or Ambaí (Ar)	Cough, flu, throat aches	Infusion of the leaf.
SIMAROUBACEAE *Castela tortuosa* Liebm.	Chaparro Amargo (Me)	Diarrhoea	Concoction of 5 gr. of bark in 100ml of water, after meals
Quassia amara L.	Hombre Grande (Cr), Quina (Br), Cuassia (Cu, Me)	Diarrhoea indigestion	Macerated bark, ingested Infusion of the leaf, ingested
Simarouba glauca DC.	Simaruba (Br), Marupa (Pe), Gavilán (Cu)	Diarrhoea	Concoction of the bark
SMILACACEAE *Smilax lanceolata* L.	Cuculmeco (Cr, Me)	Indigestion, diarrhoea	Concoction or maceration of the bark
SOLANACEAE *Cestrum parqui* L' Hér.	Parqui (Ch, Pe)	Flu	Concoction of pieces of the trunk, ingested hot
Solanum verbascifolium var. adulterinum Ham. ex G. Don	Quita-Manteca (Me), Pendejera Macho (Cu)	Indigestion	Infusion of the leaf
TAXODIACEAE *Taxodium mucronatum* Ten.	Ahuehuete (Me)	Diarrhoea	Concoction of the bark and leaf
VERBENACEAE *Aloysia citriodora* Palán, *A. triphylla* Royle	Cedrón or Maria Luisa (Ur), Hierba Luísa (Ar)	Indigestion	Infusion of the leaf, after meals
Aloysia gratissima (Gillies & Hook.) Tronc.	Palo Amarillo (Ar)	Indigestion	Concoction and infusion of the flower, stem and leaf
Aloysia polystachya (Griseb.) Moldenke	Burrito or Té de Burro (Ar)	Indigestion	Infusion of the species
Lippia integrifolia (Griseb.) Hieron	Incayuyo (Ar)	Indigestion	Infusion of the leaf and stem
Lippia turbinata Griseb.	Poleo (Ar, Ur)	Indigestion	Infusion of the leaf, flower and stem
VITACEAE *Cissus sicyoides* L.	Bejuco-Ubi (Cu), Sapo Huasca (Pe), Cipó-Pucá (Br), Tripa de Judas (Me)	Catarrh	Concoction of the leaf

WINTERACEAE *Drymis winteri* J. R. Forst. & G. Forst.	Canelo (Ch), Casca de Anta (Br)	Catarrh, flu	Infusion of the leaf
ZINGIBERACEAE *Alpinia nutans* (L.) Roscoe	Vindicá (Br), Colonia (Cu)	Catarrh	Concoction of the flower and leaf
Curcuma longa L.	Pua (Ch, Cu, Cr, Pe)	Catarrh, indigestion, diarrhoea	Concoction of the root
		Throat pains	Syrup of the root with hot water and honey
Zingiber officinale Roscoe	Gengibre (Ar)	Flu, indigestion, cough	Concoction of the root Syrup of the root with honey

Source: Author's interviews.

Ar = Argentina Br = Brasil Cu = Cuba Ch = Chile Cr = Costa Rica Me = Mexico Pe = Peru Ur = Uruguay

Table 3: Medicinal Plants and uses in case of chronic diseases in Latin America

Plant species per FAMILY	Local name (country)	Indication	Method of preparation
ADOXACEAE *Sambucus nigra* L.	Sauco (Ch, Me, Pe, Cr), Sabugueiro (Br)	Uric acid	Infusion of the leaf, in baths.
APIACEAE *Azorella compacta* Phil.	Yareta or Llareta (Ch, Pe)	Rheumatic pains	Sap is used in frictions
APOCYNACEAE *Hancornia speciosa* Gomes	Mangabeira (Br)	Rheumatism	Concoction of the bark and leaf.
ASTERACEAE *Arctium minus* (Hill.) Bernh.	Bardana (Ar, Ur)	Rheumatism	Concoction of the species, applied to the skin.
Aristeguietia gayana (Wedd.) R.M. King & H. Rob.	Asmachilca (Pe)	Asthma	Concoction of the leaf and stems, 3 branches per 1 litter of water, boiled for 10 minutes.
Artemisia annua L.	Busca pina (Ar)	Rheumatism, uric acid	Infusion of the leaf
Conyza bonariensis (L.) Cronquist	Carnicera (Ur)	Uric acid	Infusion of the leaf, ingested.
Cyclolepis genistoides D. Don	Palo Azul (Ar, Ur)	Arthritis Rheumatism	Concoction of the stem, ingested. Concoction of the bark, stems and leaves.
Gnaphalium semiamplexicaule DC.	Gordolobo (Me)	Asthma	Dried leaf, stem and flowers in infusions.
Heterotheca inuloides Cass.	Arnica (Me, Cr)	Rheumatism	Infusion of the whole species or of the flower, in frictions and plasters.
Tagetes minuta L.	Cravo-de-defunto (Br)	Rheumatic pains	Maceration of 7 flowers per litter of alcohol, in frictions.
Taraxacum officinale F. H. Wigg.	Diente de león (Ch, Cr, Pe, Me, Cu), Dente de Leão (Br)	Arthritis	Concoction of the species.
Tussilago farfara L.	Tusilago (Ar, Ch, Pe)	Asthma	Infusion or concoction of the leaf.
Xanthium spninosum L.	Clonqui (Ar)	Rheumatism	Infusion of the leaf.
BORAGINACEAE *Symphytum officinale* L.	Consuelda (Ur)	Asthma	Infusion of the leaf.
CAMPANULACEAE *Lobelia laxiflora* Kunth	Diente de Perro (Me), Lobelia (Cu), Lobélia (Br)	Asthma	Infusion of the leaf and flower.
CARYOCARACEAE *Caryocar brasiliense* Cambess.	Pequi or Piqui (Br)	Rheumatism	Frictions of the oil, extracted from the nut.
CRASSULACEAE *Bryophyllum calycinum* Salisb.	Santa-Quitéria or Pirarucu (Br), Hoja del Aire (Cr, Pe), Prodigiosa (Cu)	Rheumatism, arthritis	Cataplasm of the pressed leaf.
CUCURBITACEAE *Cucumis sativus* L., *C. anguria* L.	Maxixe (Br)	Uric acid	Refreshment of the pressed fruit in water.
Luffa operculata (L.) Cogn.	Cabacinha (Br), Esponjilla (Pe), Estropajo (Cu)	Rheumatism	Pressed fruit and seeds with *Copaifera reticulata* oil, in frictions.
Sechium edule (Jacq.) Sw.	Chayote (Cr), Xuxu (Br).	Rheumatism	Fruit pulp in cataplasms.
CUNONIACEAE *Weinmannia pinnata* L.	Oreganillo (Cu) Arrayán Blanco (Cr)	Rheumatic pains	Juice of the leaf, applied topically.
CUPRESSACEAE *Cupressus lusitanica* Mill.	Ciprés (Cr, Cu, Pe), Cipreste (Br)	Rheumatic pains	Infusion of the leaf, applied topically.
DRYOPTERIDACEAE *Elaphoglossum gayanum* (Fée) T. Moore	Calaguala (Ar)	Arthritis	Infusion of the leaf.
ELAEOCARPACEAE *Aristotelia chilensis* (Molina) Stuntz	Maqui (Ch)	Rheumatic pains, analgesic	Fresh leaves pressed, applied in cataplasms.

(continued)

Plant species per FAMILY	Local name (country)	Indication	Method of preparation
EQUISETACEAE *Equisetum giganteum* L., *E. chilense* L., *E. arvense* L.	Cola de caballo (Ar, Ch, Cr, Me), Cana de Jacaré (Br)	Uric acid	Concoction of the stems, ingested.
EUPHOBIACEAE *Euphorbia hirta* L.	Tapón (Cu), Acurauzinho (Br), Golondrina (Pe)	Asthma	Concoction of the leaf.
Julocroton argenteus (L.) Didr.	Pulmonaria (Ar)	Asthma	Infusion of the leaf.
FABACEAE *Cassia reticulta* Willd.	Saragundí (Cr), Sapechihua (Pe)	Arthritis Rheumatic pains	Maceration of the root plus 50 gr. of *Lippia alba* in alcohol 70°. Ingest one cup a day.
Caesalpinia ferrea Mart.	Jucá (Br), Guayacán de Hierro (Pe)	Rheumatism	Maceration of the pod in 1 l. of water, applied topically.
		Asthma	Concoction of the pod or in syrup
Eysenhardtia polystachya (Ortega) Sarg.	Palo Azul (Me)	Rheumatic pains	Concoction of the trunk, boiled for 5 minutes, ingested with honey.
Medicago sativa L.	Alfalfa (Me, Pe, Ch), Alfafa (Br)	Rheumatic pains	Infusion of the species, applied topically.
GROSULARIACEAE *Escallonia pendula* (Ruiz & Pav.) Pers.	Pumachilca (Pe)	Rheumatic pains	Infusion of the leaf, in baths
LAMIACEAE *Hedeoma multiflora* Benth.	Tomillo serrano or Yerba del pájaro (Ar)	Rheumatism	Infusion of the leaf, flower and stems, in frictions.
Lavandula spica var. angustifolia (Ging.) Briq.	Alfazema (Br), Alhucema (Ch, Pe)	Rheumatism	Maceration of the flower (50 gr.) plus 25 gr. of Eucalyptus leaves and 25 of *Cerresus vecyparius* per 25 days in 100 gr. of alcohol
Marrubium vulgare L.	Marrubio (Cu, Me, Pe), Hortelã-Grande (Br)	Arthritis	Heated leaf topically, in compresses.
Mentha spicata L.	Vick (Br), Hierbabuena (Me, Cr, Pe), Menta Jamaicana (Cu)	Rheumatic pains	Concoction of the leaf, in frictions.
Minthostachys setosa (Briq.) Epling	Muña (Pe)	Rheumatic pains	Infusion of the leaf and stems, in cataplasms.
Ocimum basilicum L.	Manjericão (Br), Albahaca (Ar, Ch, Me, Pe, Cr, Cu)	Rheumatism	Infusion of the leaf, ingested.
Rosmarinus officinalis L.	Romero (Ar, Ch, Cr, Cu, Me, Pe, Ur), Rosmaninho or Alecrim (Br)	Arthritis, rheumatic pains	Maceration of the species in 1 l. of alcohol, for 15-20 days.
Salvia fulgens Cav.	Mirto (Cr, Me)	Uric acid	Infusion of the leaf.
Salvia officinalis L.	Salvia (Ar, Cr, Cu), Poleo (Pe, Ch, Me, Ur), Salvia (Br)	Asthma	Infusion of the leaf
Vitex agnus-castus L.	Alecrim or Pau de Angola (Br), Sauzgatillo (Pe)	Rheumatism	Concoction of 3 leaves, in frictions
LAURACEAE *Cinnamomum camphora* (L.) J. Presl.	Alcanfor (Ur)	Rheumatism	Frictions of 1 leaf together with the sap of *Aloe vera* and 4 or 5 *Ruta graveolens* leaves, in half a litter of alcohol.
Cinnamomum zeylanicum Blume	Caneleira (Br), Canela de Ceilán (Me, Pe, Ch, Cu, Cr, Ar)	Rheumatism	Maceration of 100 gr. of the bark in 1l. of alcohol, for 15 days, used in frictions.
Persea Americana Mill.	Abacateiro (Br), Palto or Palta (Ar, Ch, Ur, Me, Pe), Aguacate (Cr, Cu)	Arthritis	Concoction of the leaf together with *Glycine max* seeds.
LYTHRACEAE *Cuphea aequipetala* Cav.	Hierba del Cancer (Me)	Arthritis	Concoction of the species, in plasters.
Heimia salicifolia Link	Jarilla (Me)	Rheumatic pains	Concoction of the leaf, in baths.
MALVACEAE *Malva neglecta* Wallr.	Malva (Ar, Ur)	Rheumatism	Infusion of the leaf, in baths.
MELIACEAE *Carapa guianensis* Aubl.	Andiroba (Br), Najesí (Cu)	Rheumatic pains	Plaster of the bark together with *Copaifera reticulata* bark, *Cinnamomum camphora* bark, *Caryocar coriaceum* oil, Eucalyptus leaves, *Zingiber officinalis* root, *Eleutherine plicata* bulb and *Luffa operculata* fruit and mutton grease, applied topically.
Trichilia glabra L., *T. havanensis* Jacq.	Siguaraya (Cu), Cucharrillo (Me), Uruca (Cr), Marinheiro de Folha Larga (Br)	Rheumatism	Infusion of the leaf, in baths and frictions.
MONIMIACEAE *Peumus boldus* Molina	Boldo (Ar, Br, Ch, Me, Pe)	Rheumatism, uric acid	Infusion of the leaf, in baths or ingested to lower the uric acid.
MYRTACEAE *Eucalyptus globulus* Labill.	Eucalipto (Br, Ch, Cu, Cr, Me, Pe, Ar, Ur)	Asthma	Infusion of the leaf.

PAPAVERACEAE *Argemone mexicana* L.	Chicalote (Me), Cardo Blanco (Pe), Cardo Santo (Cr, Cu)	Asthma	Infusion of the flower.
PHYTOLACCACEAE *Petiveria alliaceae* L.	Mucuracá (Br), Anamú (Cu), Mucura Hembra (Pe), Hierba de Zorrillo (Cr, Me)	Rheumatism	Infusion of the leaf, in cataplasms and frictions.
PIPERACEAE *Peperomia pellucida* (L.) Kunth	Erva-de-Jaboti (Br), Peperomia (Me), Lengua de Motelo (Pe), Yerba de la Plata (Cu)	Rheumatism	Plaster of the fresh leaf in topical application.
Piper callosum Ruiz & Pav.	Elixir Paregórico (Br), Guayusa Macho (Pe)	Rheumatism	Infusion of the leaf, in frictions and plasters.
Pothomorphe umbellata (L.) Miq., *Piper umbellatum* L.	Malvarisco (Br), Pariparoba (Pe), Caisimón (Cu), Santa Maria (Cr)	Rheumatism	Heated leaf applied to the skin. Concoction of 2/5 leaves per 1 l. of water, boiled for 10 minutes, in frictions or ingested as refreshment.
POLYGONACEAE *Muehlenbeckia volcanica* (Benth.) Endl., *M. hastulata* (Sm.) I. M. Johnst.	Quilo (Ch), Mullaco (Pe)	Asthma	Concoction of the bark.
POLYPODIACEAE *Polypodium aureum* L., *Phlebodium aureum* (L.) J. Sm.	Calaguala (Cr), Helecho Pata de Conejo (Me)	Uric acid	Concoction of the root.
Polypodium scolopendria Burm. f.	Matua' Pua (Ch)	Uric acid	Ingestion of the root, after chewing well, among Eastern Islanders.
ROSACEAE *Acaena myriophylla* Lindl.	Cadillo (Ar)	Uric acid, arthritis	Infusion of the leaf and stems.
Prunus capuli Cav.	Capulí or Capulin (Me, Pe)	Rheumatism	Concoction of the bark, ingested.
RUBIACEAE *Coffea arabica* L.	Cafeeiro (Br), Cafeto (Cu, Pe)	Rheumatism Asthma	Infusion of the leaf, in baths. A cup of coffea.
Hamelia patens Jacq.	Ballentilla (Me), Ponasí (Cu), Benzeynuca (Pe), Fosforillo (Cr)	Rheumatism	Concoction of the leaf, in baths.
Morinda citrifolia L.	Noni (Cr, Cu, Br)	Rheumatism	Concoction of the fruit or leaf, in frictions.
Uncaria tomentosa (Willd. ex Roem. & Schult.) DC.	Unha-de-Gato (Br), Uña de Gato (Pe, Ch, Cr, Me)	Arthritis, rheumatism	Concoction of the bark, in frictions.
RUTACEAE *Casimiroa edulis* La Llave & Lex.	Zapote Blanco (Cu, Me)	Arthritis, rheumatism	Concoction of 2 leaves with 1 tea spoon of *Sinapis nigra*, boiled for 5 min. before sleep.
SALICACEAE *Salix humboldtiana* Willd., *S.chilensis* Molina	Sauce Chileno Llorón (Ch, Me, Pe, Cu, Cr), Salgueiro-Chorão (Br)	Rheumatism	Concoction of the leaf and bark.
SCHOEPFIACEAE *Quinchamalium chilense* Molina, *Q. majus* Brongn.	Quinchamali (Ch, Pe)	Rheumatism	Concoction of the species, in frictions.
SOLANACEAE *Brugmansia candida* Pers., *B. sanguinea* (Ruiz & Pav.) D. Don	Floripondio (Me)	Rheumatic pains Arthritis Asthma	Maceration of the flower and leaf, in alcohol. Used in frictions.Concoction of the leaf, flower and seed, in cataplasm. Inhalation of the burned-up leaf.
Datura stramonium L.	Toloache (Me), Chamico (Cu, Pe), Reina de la Noche (Cr)	Asthma Rheumatism	Infusion of the leaf. Maceration of 60gr. of seeds in ¼ of alcohol 90°, in frictions.
Nicotiana glauca Graham	Palán-Palán (Ar)	Rheumatism	Infusion of the leaf and bark, applied in frictions.
Solanum americanum Mill.	Hierba Mora (Cr, Cu, Me, Pe)	Rheumatic painsAsthma	Maceration of the leaf in alcohol 90°, in frictions.Concoction of the leaf.
THEACEAE *Camelia sinensis* (L.) Kuntze	Té Verde (Ar, Ur)	Asthma	Infusion of the leaf.
VERBENACEAE *Lippia turbinata* Griseb.	Poleo (Ar, Ur)	Rheumatism	Infusion of the leaf, flower and stems, in external applications.
VITACEAE *Cissus sicyoides* L.	Bejuco-Ubi (Cu), Sapo Huasca (Pe), Cipó-Pucá (Br), Tripa de Judas (Me)	Rheumatism	Infusion of the leaf, in frictions.
WINTERACEAE *Drymis winteri* J. R. Forst. & G. Forst.	Canelo (Ch), Casca de Anta (Br)	Rheumatism	Concoction of the bark and leaf, in baths. Maceration of 200 gr. of bark and leaves in 1 l. of alcohol, used in frictions. Infusion of the leaf, in frictions.
ZYGOPHYLACEAE *Larrea divaricata* Cav.	Jarilla (Ar)	Rheumatism	Infusion of the species, ingested.

Source: Author's interviews.

Ar = Argentina Br = Brasil Cu = Cuba Ch = Chile Cr = Costa Rica Me = Mexico Pe = Peru Ur = Uruguay

Table 4: Medicinal Plants and uses in case of serious diseases in Latin America

Plant species per FAMILY	Local name (country)	Indication	Method of preparation
AMARANTHACEAE *Pfaffia glomerata* (Spreng.) Pedersen	Corrente (Br), Lancetilla (Pe)	Diabetes	Infusion of the leaf, daily
ANACARDIACEAE *Anacardium occidentale* L.	Cajueiro (Br), Marañon (Cu, Cr)	Diabetes	Infusion of the leaf, daily
Juliania adstringens (Schltdl.) Schltdl.	Cuachalalate (Me)	Cancer	Concoction of the bark, 3 to 4 times a day.
Mangifera indica L.	Mangueira (Br), Mango (Cu, Me; Pe, Cr).	Cancer (skin)	Concoction of the bark, in frictions and cataplasms
		Diabetes	Infusion of the leaf and concoction of the bark, daily Infusion of the leaf together with *Bauhinia nitida* leaf, daily.
APIACEAE *Azorella compacta* Phil.	Yareta or Llareta (Ch, Pe)	Cancer (skin)	Plasters and cataplasms of the sap, applied externally.
		Diabetes	Infusion of the flower, taken daily.
Foeniculum vulgare Mill.	Hinojo (Cu, Cr, Ch, Pe, Me)	Cancer (prostate)	Infusion of the leaf and stems together with *Cupressus lusitanica* leaf and *Fabiana imbricata* leaf and stem, ingested.
APOCYNACEAE *Hancornia speciosa* Gomes	Mangabeira (Br)	Diabetes	Concoction of the bark and leaf
Himatanthus sucuuba (Spruce ex Müll. Arg.) Woodson	Sucuúba (Br)	Cancer (skin)	Latex used against tumours
ASPARGACEAE *Cordyline terminalis* (L.) Kunth	Ti (Ch), Drago (Cu), Caña de Indio (Cr), Drácena or Muñeca (Me)	Diabetes, Cancer	Cooked leaf is ingested regularly, in Easter Island, Chile.
ASTERACEAE *Artemisia absinthium* L.	Ajenjo (Me, Ch), Incienso ajenjo (Cu)	Diabetes	Infusion of the leaf, daily
Bidens pilosa L.	Picão (Br), Romerillo (Cu), Aceitilla (Me), Amor seco (Pe)	Diabetes	Dried leaf in infusion, daily
Calendula officinalis L.	Mercadela (Pe, Me, Cr), Caléndula (Cu, Ar)	Cancer	Infusion of the flower. Concoction of the flower is a tranquillizer and used to diminish nausea in patients
Chuquiraga spinosa Less.	Huamampinta (Pe)	Cancer (prostate)	Infusion of one tea spoon of dried huamampinta, and one of *Bixa orellana* leaf, daily. Concoction of the whole plant species, 3 times a day.
Cynara scolymus L. *Cynara cardunculus* var. *Scolymus* (L.) Fiori	Alcachofra (Br, Me, Pe, Cr), Alcachofra (Ar)	Diabetes	Sqwezed leaves ingested alone or with *Curcuma longa*. Boiled leaf ingested. Infusion of the leaves, daily.
Gnaphalium viravira Molina	Vira Vira (Ch, Pe)	Cancer	The whole Andean species is ingested in infusions and concoctions against all types of tumours
Neurolaena lobata (L.) Cass.	Gavilana (Cr, Pe), Victoriana (Cu)	Diabetes	Infusion of the leaf daily, in fast.
Polymnia sonchifolia Poepp.	Yacón (Pe)	Diabetes	Raw or boiled “potato” ingested
Senecio canescens (Bonpl) Cuatrec.	Huila-Huila (Pe)	Cancer (womb)	Concoction of the whole plant alone or together with *Buddleja incana*, in topical baths.
Senecio subulatus D. Don ex Hook. & Arn.	Chachakoma (Ch, Pe)	Cancer (mouth and throat)	Infusion of the whole Andean herb
Stevia boliviensis Sch. Bip. ex Griseb.	Estevia (Ar, Ur, Ch)	Diabetes	Infusion of the leaf. Powered leaves replace sugar.
Taraxacum officinale F. H. Wigg.	Diente de león (Ch, Cr, Pe, Me, Cu), Dente de Leão (Br)	Diabetes	Root concoction and leaf infusion.
		Cancer (prostate and breast)	Infusion of the leaf
Tessaria absinthioides (Hook. et Arn.) DC.	Sorona or Brea (Ch)	Diabetes	Infusion of the leaf, daily
Xanthium chinense Mill.	Guizazo de caballos (Cu), Guizado (Pe)	Cancer	Infusion of 1 leaf per 0.5 litters of water. Concoction of the root.
BIGNONIACEAE *Arrabidaea chica* (Bonpl.) B. Verl.	Pariri (Br), Puca-Panga (Pe), Bejuco Hierro (Cr)	Diabetes	Infusion of the leaf in refreshment, ingested regularly.
		Cancer (womb)	Infusion of the leaf against anaemia and tumours.

Tabebuia rosea (Bertol.) A. DC., *T. impetiginosa* (Mart ex DC.) Standl.	Lapacho (Cr), Arupo Rosa (Pe), Ipê Roxo (Br), Palo Rosa or Roble (Me)	Diabetes Cancer	Decoction of the bark, twice a day. Maceration of the bark.
Tecoma stans (L.) Juss. ex Kunth	Tronadora (Me), Huaranhuay (Pe), Saúco Amarillo (Cu), Vainillo(Cr)	Diabetes	Infusion of the leaf, twice a day Concoction of the bark, daily.
BRASSICACEAE *Rorippa nasturtium-aquaticum* (L.) Hayek	Berro (Ar, Ch, Ur), Agrião (Br)	Diabetes	Infusion of the leaf Ingested in soups or raw, in salads
BURSERACEAE *Bursera simaruba* (L.) Sarg.	Almácigo (Cu), Jiñocuave or Indio Desnudo (Cr), Palo Santo (Me, Pe)	Diabetes	Concoction of the bark, ingested 3 times a day, after meals
CACTACEAE *Opuntia tomentosa* Salm-Dyck, *O. ficus*-indica (L.) Mill., *O. fulgida* Engelm.	Nopal (Me, Cr, Cu, Ch),	Diabetes	Ingest boiled tender cactus parts with the fruit (or alone, accompanying fish and meat). Raw cactus pressed with *Aloe vera* sap, 1 tea spoon, 2/ day.
CELASTRACEAE *Hippocratea excelsa* Kunth	Cancerina (Me)	Cancer (skin)	Maceration of the bark in water or alcohol, applied topically in frictions.
CHENOPODIACEAE *Beta vulgaris* L.	Remolacha (Ar, Ch, Cr, Pe, Ur), Betabel (Me), Beterraba Açucareira (Br)	Cancer Diabetes	Ingestion of the root as cancer preventive. Concoction of the leaf, regularly
COMMELINACEAE *Zebrina pendula* Schnizl.	Hoja Milagro (Cr), Zebrina (Br, Pe), Hoja de la Plata (Me)	Diabetes	Infusion of the leaf and stem, several times a day.Refreshment of pressed leaf with water.
CONVOLVULACEAE *Ipomoea stans* Cav.	Tumbavaqueros (Me), Tanibata (Pe)	Diabetes	Concoction of the root, daily
COSTACEAE *Costus spicatus* (Jacq.) Sw.	Canarana (Br), Caña Mexicana (Cu), Caña Agria (Cr)	Cancer (kidney and bladder)	Fresh heated leaf applied to the kidney or bladder, alone or together with the oil of *Carapa guianensis*.
		Eye infections	Maceration of the leaf in water, previously strained, applied to the eyes.
CRASSULACEAE *Bryophyllum calycinum* Salisb.	Santa-Quitéria or Pirarucu (Br), Hoja del Aire (Cr, Pe), Prodigiosa (Cu)	Glaucoma	Juice of the leaf squeezed in the eyes.
CUCURBITACEAE *Cucumis sativus* L., C. *anguria* L.	Maxixe (Br)	Diabetes	Press 3 pieces of the fruit with one cup of water. Ingest every 15 days, only.
Momordica charantia L.	Sorosí (Cr), Balsamina (Pe), Cundeamor (Cu), Erva de Lavadeira (Br)	Diabetes	Concoction of the leaf and stems, daily. Infusion of the leaf, daily.
EQUISETACEAE *Equisetum giganteum* L., *E. chilense* L., *E. arvense* L.	Cola de caballo (Ar, Ch, Cr, Me), Cana de Jacaré (Br)	Cancer (prostate, urinary)	Concoction of the stems, ingested.
EUPHORBIACEAE *Croton cajucara* Benth.	Sacaca (Br, Pe)	Diabetes	Concoction of the leaf, daily
Jatropha curcas L.	Pião Branco (Br), Piñon (Cr), Piñon Botija (Cu)	Diabetes Leukaemia	Infusion of the leaf, daily Infusion of the leaf
Jatropha gossypiifolia L.	Pião Roxo (Br), Mano de León (Me), Piñon Colorado (Pe), Fraillecillo (Cr)	Diabetes Leukaemia Cancer (skin and prostate)	Infusion of the leaf, daily. Concoction of the root. Infusion of the leaf in topical skin application. Concoction of the leaf, ingested (prostate).
Ricinus communis L.	Mamona (Br)	Cancer (skin)	Oil applied to the skin heals tumours.
FABACEAE *Bauhinia manca* Standl., *B. guianensis* Aubl.	Escada de Jabotí (Br), Escalera de Mono (Cr, Pe)	Diabetes	Concoction of the fruit, regularlyInfusion of the bark and leaf
Bauhinia nitida Benth., *B. forficata* Link, *B. divaricata* L.	Pata de Vaca (Br, Cu, Pe, Me, Ch, Ur)	Diabetes	Maceration of the bark, as refreshment, twice a day. Infusion of the leaf together with *Phyllanthus sellowianus* bark, *Ficus carica* leaf, for type 2.Infusion of the leaf, 3 times/ day.Alcohol maceration with bark, leaf and flower. Ingest 30 drops with water, in fast. Add 15 at lunch and dinner.
Caesalpinia ferrea Mart.	Jucá (Br), Guayacán de Hierro (Pe)	Diabetes	Maceration of the pod and shell in water, just half a glass.
Cassia alata L.	Guacamaya Francesa (Cu), Matupa (Pe), Hierba de los Herpes (Me)	Cancer (skin)	Concoction of the bark, flower and leaf, in cataplasms and frictions.

(continued)

Plant species per FAMILY	Local name (country)	Indication	Method of preparation
Cassia angustifolia Vahl	Sen (Ch, Cr, Cu, Me, Pe), Sene (Br)	Cancer (skin)	Leaf applied topically to the skin.
Desmonium molliculum (H.B.K.) DC.	Manayupa (Pe)	Cancer (skin)	Concoction of the whole species in baths.
Hymenaea courbaril L.	Jatobá (Br), Guapinol (Cr), Azucar Huayo (Pe)	Cancer	Maceration of the bark in water or wine, against tumours.
		Diabetes	Infusion of the leaf and bark. Concoction of the bark, boiled for ten minutes, daily.
Medicago sativa L.	Alfalfa (Me, Pe, Ch), Alfafa (Br)	Cancer (skin)	Concoction of whole plant in baths and cataplasms.
Myroxylon balsamum (L.) Harms	Bálsamo Santo (Br)	Cataracts	Infusion of the leaf distilled in eye drops.
Otholobium glandulosum (L.) J. W. Grimes	Cullen (Ch)	Diabetes	Infusion of the leaf, daily
GENTIANACEAE *Gentianella alborosea* (Gilg) Fabris	Hercampuri (Pe)	Diabetes	Concoction of the whole herb, conveniently sweetened.
GERANIACEAE *Geranium dielsianum* R. Knuth	Pasuchaca (Pe)	Diabetes	Infusion of the flower and stem, ingested three times a day
HUMIRIACEAE *Endopleura uchi* (Huber) Cuatrec.	Uxi-Amarelo (Br)	Cancer (womb)	Refreshment of the infusion of 1 soup spoon of the species together with *Uncaria tomentosa*, per litter of water. Have the drink always fresh, one jar per day, against cystitis and tumours. Only for women.
LAMIACEAE *Lepechinia caulescens* (Ortega) Epling	Bretónica (Me)	Diabetes	Concoction of the dried leaf and stems
Marrubium vulgare L.	Marrubio (Me, Ch, Pe, Cu), Hortelã-Grande (Br)	Diabetes	Infusion of the leaf, twice a day
Mentha spicata L.	Vick (Br), Menta Americana (Cu), Hierbabuena (Me, Cr, Pe)	Diabetes	Concoction of the whole herb, several times a day, hot or as refreshment
Minthostachys setosa (Briq.) Epling	Muña (Pe)	Cancer (skin)	Cataplasms of the leaf and stem
Ocimum sanctum L.	Albahaca Morada Criolla (Cu)	Diabetes	Concoction of the leaf, with breakfast.
Rosmarinus officinalis L.	Romero (Me, Pe, Cu, Cr, Ch, Ar, Ur), Alecrim (Br)	Diabetes	Infusion of the leaf, twice a day. Infusion of the whole herb, frequently.
		Cancer	Infusion of the whole herb
Salvia microphylla Kunth., *S. fulgens* Cav., *S. calcicola* Harley	Mirto (Me, Cr)	Cancer (skin)	Infusion of the leaf, flower and stem, in baths.
		Cancer preventive	Infusion of the purple Mexican *calcicola* species leaf, ingested.
Salvia officinalis L.	Salvia (Ar, Cr, Cu), Poleo (Pe, Ch, Me, Ur), Salvia (Br)	Diabetes	Infusion of the leaf, ingested regularly
LAURACEAE *Persea americana* Mill.	Abacateiro (Br), Palto or Palta (Ar, Ch, Ur, Me, Pe), Aguacate (Cr, Cu)	Diabetes	Ingestion of the fruit is recommended to control sugar levels.
LORANTHACEAE *Phthirusa adunca* (G.Mey) Maguire	Suelda Consuelda (Cr, Pe)	Cancer (skin)	Maceration of the leaf applied topically. Infusion in baths.
LYTHRACEAE *Cuphea aequipetala* Cav.	Hierba del cancer (Me)	Cancer (skin)	Infusion of the species in plasters and baths.
MALVACEAE *Ceiba pentandra* (L.) Gaertn.	Ceiba (Me, Cu), Lupuna (Pe), Sumaúma (Br)	Diabetes	Concoction of the bark, twice a day.
		Cancer	Concoction of the bark against tumours.
Hibiscus rosa-sinensis L.	Mar Pacífico (Cr, Cu), Tulipán (Me), Rosa de China (Pe)	Cancer (skin)	Infusion of the flower and leaf, in baths and in external applications.
Luehea speciosa Willd.	Açoita-Cavalo (Br), Calzoncillo (Pe)	Diabetes	Concoction of the bark, taken daily.
		Cancer (skin)	Add 3-4 pieces of the bark and boil them together with *Uncaria tomentosa* bark or fresh leaf, *Astronium urundeuva* bark, *Copaifera reticulata* and *Hymenaea courbaril* pieces of bark. The concoction of five Amazonian species is applied directly in tumours.
MELIACEAE *Carapa guianensis* Aubl.	Andiroba (Br), Najesí (Cu)	Diabetes	Oil of the bark in water, 5 to 8 drops a day.

Swietenia humilis Zucc.	Zopillote (Me), Caoba (Cu)	Diabetes	Concoction of the seeds, in fast or before the main meals.
		Cancer (skin)	Concoction or maceration of the bark and seeds, applied topically.
MORACEAE *Artocarpus altilis* (Parkinson) Fosberg	Fruta-Pão (Br), Arbol del Pan (Pe)	Cancer (skin)	Cataplasm of the dried leaf, applied directly to the affected tissue.
Morus tinctoria L.	Morera (Ch), Mora (Me), Insira (Pe), Mora del País (Cu), Amora Branca (Br)	Diabetes	Infusion of the leaf together with *Bauhinia nitida*, daily. Infusion of the leaf, 3/4 times a day.
MYRTACEAE *Eugenia cumini* (L.) Druce	Ameixa (Br)	Diabetes	Concoction of the bark
ONAGRACEAE *Oenothera stricta* Ledeb. ex Link	Diego de la Noche (Ch)	Cancer (prostate)	Infusion of the species together with Corchito root, Té Buchu, Horizonte and Oroicopó endemic species, ingested together with drops of *Croton lechleri*, for twenty days.
OXALIDACEAE *Averrhoa carambola* L.	Carambola (Br), Carambolo (Cr, Me)	Diabetes	Infusion of the leaf together with the fruit juice.
PAPAVERACEAE *Bocconia frutescens* L.	Janalí (Pe), Palo Amarillo (Cu)	Cancer (skin)	Latex applied topically to the skin. Heated leaf applied to the skin.
PASSIFLORACEAE *Turnera ulmifolia* L., *T. Diffusa* Willd. ex Schult.	Clavel de Oro (Me), Marilopez (Cu), Damiana (Br, Pe)	Diabetes	Infusion of the leaf, taken daily, about 2 gr. per cup of tea.
PHYLLANTHACEAE *Phyllanthus sellowianus* (Klotzsch) Müll. Arg.	Sarandí Blanco (Ar, Ur)	Diabetes	Concoction of the bark, ingested regularly.
PHYTOLACCACEAE *Petiveria alliacea* L.	Mucuracá (Br), Anamú (Cu), Mucura Hembra (Pe), Hierba de Zorrillo (Cr, Me)	Cancer	Concoction of 30 leaves per litter of water, 3 times a day.
PIPERACEAE *Peperomia pellucida* (L.) Kunth	Erva-de-Jaboti (Br), Peperomia (Me), Yerba de la Plata (Cu), Lengua de Motelo (Pe)	Diabetes	Infusion of the leaf, several times a day
PLANTAGINACEAE *Plantago major* L.,	Llantén (Ch, Pe, Cr, Cu, Ar, Me, Ur), Tansagem (Br).	Cancer (womb)	Bath of both species boiled in 5 l. of water. Concoction of the plant ingested. Or: Leaf boiled and pressed together with salt and lemon, applied externally.
P. lanceolata L.	Siete Venas (Ch)	Cataracts	Juice of the leaf in eye drops.
POACEAE *Zea mays* L.	Choclo (Ch), Maiz (Ar, Pe, Me, Cr, Cu)	Diabetes and Cancer (urinary tract)	Infusion of the flower stamens
POLYPODIACEAE *Polypodium aureum* L.	Calaguala (Cr), Helecho Pata de Conejo (Me)	Diabetes	Concoction of the root, daily.
Polypodium scolopendria Burm. f.	Matua'Pua (Ch)	Cancer	Ingestion or concoction of the root.
QUILLAJACEAE *Quillaja saponaria* Molina	Quillay (Ch), Quilaia (Br)	Cancer (skin)	Concoction of the bark, ingested or applied to the skin.
ROSACEAE *Crataegus mexicana* DC.	Tejocote (Me)	Diabetes	Concoction of the bark, daily.
Rubus adenotrichus Schldl.	Zarzamora (Cu, Me, Ch)	Diabetes	Concoction of the leaf, regularly.
RUBIACEAE *Coffea arabica* L.	Cafeeiro (Br), Cafeto (Cu, Pe)	Diabetes	Raw seeds in infusion. Ingest only one soup spoon, in the morning.Concoction of the leaf, regularly.
Hamelia patens Jacq.	Ballentilla (Me), Ponasí (Cu), Benzeynuca (Pe), Fosforillo (Cr)	Cancer (skin)	Concoction of the leaf and flower, ingested or in baths.
Morinda citrifolia L.	Noni (Cr, Cu, Br)	Cancer (prostate)	Refreshment of the fruit pressed together with grape juice. Ingestion of the fruit. Fruit boiled and pressed is recommended against all types of tumours.
		Diabetes	Ingestion of the fruit, daily.
Uncaria tomentosa (Willd. ex Roem. & Schult.) DC.	Unha-de-Gato (Br), Uña de Gato (Pe, Ch, Cr, Me)	Cancer	Concoction of the bark, as analgesic, on a daily basis. Infusion of the fresh leaf. Concoction of the bark, in frictions, in case of skin tumours
SCHOEPFIACEAE *Quinchamalium chilense* Molina	Quinchamali (Ch, Pe)	Diabetes	Concoction of the species together with *Lippia chilensis* and *Azorella compacta* flower, for 10 minutes, ingested several times a day.

(continued)

Plant species per FAMILY	Local name (country)	Indication	Method of preparation
SCROPHULARIACEAE *Buddleja globosa* Hope	Matico(Ch), Acerillo (Pe)	Diabetes	Infusion of the leaf, daily
SIMAROUBACEAE *Castela tortuosa* Liebm.	Chaparro Amargo (Me)	Diabetes	Concoction of the stems and bark, ingested up to 5 times a day.
		Leukaemia	Concoction of the bark and stems, together with *Panax ginseng*, 3 times a day.
Quassia amara L.	Hombre Grande (Cr), Quina (Br), Cuasia (Cu, Me)	Diabetes	Concoction of the bark, boiled for 10 minutes, after the 3 meals.
Simarouba glauca DC.	Aceituno (Cr), Simaruba (Br), Marupa (Pe), Gavilán (Cu)	Cancer (skin)	Cataplasms of the pressed leaf.
SMILACACEAE *Smilax lanceolata* L.	Cuculmeco (Cr)	Cancer (digestive tract)	Concoction of 250 gram. of the root in 2 l of water, boiled for 15-20 minutes. Also for anaemia
URTICACEAE *Cecropia obtusifolia* Bertol.	Guarumo (Cr), Imbaúba (Br), Cetico (Pe)	Diabetes	Concoction of dried leaf, daily
Cecropia peltata L., C. *palmata* Willd.	Yagruma (Cu), Umbaúba (Br), Pungara (Pe)	Diabetes	Infusion of the leaf, daily
VERBENACEAE *Lippia graveolens* Kunth	Oregano (Cr, Me)	Diabetes	Syrup of dried leaves mixed with honey
Verbena jamaicensis L.	Verbena Silvestre (Cu, Cr), Gervão (Br), Verbena Azul or Morada (Pe, Ch, Me)	Diabetes	Concoction of the whole plant is ingested daily.
Verbena officinalis L.	Verbena (Ch, Pe, Me, Cu)	Cancer	Concoction of 30 grams of the stems, leaves and flowers boiled in 1 l. of water, ingested against tumours.
XANTHORRHOEACEAE *Aloe vera* (L.) Burm. f.	Zábila (Me), Sabila (Cr, Pe, Cu, Ch, Ar, Ur), Babosa (Br)	Cancer (prostate, kidney and bladder)	Aloe sap with honey and whiskey, ingested daily. Aloe sap, lemon juice and water, ingested daily.
		Cataracts	Aloe sap applied to the eyes.
		Diabetes	Aloe sap with water, ingested daily

Source: Author's interviews.

Ar = Argentina Br = Brasil Cu = Cuba Ch = Chile Cr = Costa Rica Me = Mexico Pe = Peru Ur = Uruguay

eight countries. Costa Rica has the best record of species and registered the widest number of users in case of prescriptions against diabetes. Peru ranks first in the case of cancer. Skin cancer is frequently treated with tropical American plants. But prostate cancer has the most successful rate of recovery among the Peruvians. Species like *Chuquiraga spinosa* (Huamampinta) are dwarfing Asteraceae with reports of effective properties. The longevity of Peruvian males speaks for the Andean species where pharmacological trials fail.

Again Asteraceae family is the most abundant, a feature that is common to the three groups of health problems selected for the current analysis. Fabaceae ranks second for the treatment of serious diseases. The most serious diseases are cured making usage of barks. Other families such as Anacardiaceae, Apocynaceae, Burseraceae, Lauraceae, Malvaceae, Meliaceae and Rubiaceae have less numerous yet quite appreciated recommendations, confirmed by chemical trials and have proven pharmacological effects.[7, 24, 25]

DISCUSSION

Glycemic control in diabetes patients is the subject of considerable scientific literature.[26, 27] There are examples of no adherence to medication and conventional therapies, both in case of type 1 and 2 diabetes. This is less related to health literacy (defined as one's ability to understand, engage and actively apply health information toward the goal of improving one's health)[28] than from the option for alternative medication practices. Table 4 lists a good range of medicinal flora recommended for diabetes patients. They represent valuable alternatives for conventional treatments the author (as a geographer working for a Tropical Institute) gathered in Latin America, over a 14 year period.

The prescriptions are used on a regular basis, most daily, and some during fasting. Pharmacological trials were obviously not conducted with each one of the plant species, but referential information was always consulted to ensure the properties of the identified material.

The active principles can be found in the leaf, bark, roots, seeds, sap and fruit. The juice of *Morinda citrifolia* is a good cancer preventive whilst the ingestion of the fruit on a daily basis is recommended for glycemic control. This Pacific island tree has been successfully introduced in Central America and the Caribbean islands. It is also a recent acquisition in Northeastern Brazil.

Most indigenous prescriptions for diabetes patients gathered are from the culture of the Chorotegas, from Costa Rica, researched in 2009. They are: the bark of *Bursera simaruba* (Indio Desnudo), of *Hymenaea courbaril* (Guapinol), and of *Quassia amara* (Hombre Grande), which are tropical forest species also found in Amazonia. The extraction of the active principles is done by means of concoction or maceration. Infusions are usually associated with soft plant parts, such as leaves and flowers.

Native medicine was defined by Patricia Hernández as a therapeutic system, practiced by indigenous groups, that reflect the way they perceive the world and all humanity, in terms of their relationship with the environment.[29] The process of healing people consists on reestablishing the balances of body and mind, using herbalism together with ancestral rituals. To the south of Mexico City subsists the traditional culture of the Nahua Indians. Many plant species used there are common to the old Azteca culture. Our team found more prescriptions against mild and chronic diseases there during the joint Portuguese-Mexican mission that took place in 2006,[30] than the ones used to treat serious afflictions. Laura Alvarez wrote an anthropological study of their curative tradition, adding the native vernacular names.[31] Noteworthy are the variety of *Opuntias* consumed in Mexico (Tlatonocth). They are consumed regularly in order to control diabetes.

The World Health Organization published four volumes entitled "WHO monographs on selected medicinal plants". A total of 118 monographs are easily available to concerned scientists and scholars. In 2007, the organization further edited the WHO guidelines on good manufacturing practices for herbal medicines.[25] The purpose is to make available scientific information related to the safety of plant species used in traditional medicine and to facilitate regulatory and quality assurance measures concerning the use of medicinal flora at national level.

Clinical data and pharmacological trials described in the monographs permitted the confirmation of antidiabetic activity of such African species as *Momordica charantia*, cultivated in Costa Rica, Cuba, Peru and Brazil. They proved the anti-inflammatory activity of the leaf of European *Rosmarinus officinalis*, gardened and used to treat rheumatic aches and arthritis in all Latin American countries researched. The monographs also include several Native American species including *Psidium guajava*. In Brazil, leaf concoctions are used in domestic prescriptions against diarrhoea. Clinical trials support a good number of therapeutic virtues, as the use of the leaf has proven effects on the central nervous system, favouring sleep; it has muscle relaxant activity; however the antidiarrhoeal activity is considered weak.

As far as the American flora is concerned, the American Plant Therapy Institute (IFA), based in Lima, is one of the most reliable sources of pharmacological trials regarding the Andean and Amazonian plant species.[32, 33] The antioxidant and anticancer activities of such Peruvian species as *Desmonium molliculum* and *Uncaria tomentosa* are confirmed by joint Peruvian-American work and Peruvian medical research.[33, 34]

Pharmacological studies of tropical species used worldwide have even better availability. India and the Middle East rival with European scientific institutions in this domain. *Cymbopogon citratus* is an excellent example.[11] One of the top ranking preferences in Latin America, it is universally used in infusions and concoctions against indigestion, flu and cough. The herb is cultivated in gardens, vacant plots, on hedges, and grows wild along the sidewalks and paths, alongside rivers, in the rural hinterland. It is even cultivated with success in temperate continental countries, as the joint Portuguese-Argentinean team recorded it intercropped in the home gardens of Río Cuarto, in the pampas, used both as medicine and insect repellent.

CONCLUSION

The bulk of the samples gathered during this fourteen years study were mainly constituted by organic gardeners and farmers, people that grow therapeutic species in pots, front and backyards, and in the rural hinterland of wide urban agglomerations, for self-consumption, barter and trade. Domestic prescriptions were dominant in this focus group. Ancestral remedies were more prolific among traditional healers and wild species collectors, particularly abundant in Mexico, Brazil, Peru, Chile and Costa Rica, where communities from such ethnic groups as the Aymara Indians (Chile and Peru), the Chorotegas (Costa Rica), and the Nahua (Mexico) still strive for their cultural practices.

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