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Medicinal Natural and Agricultural Ecosystems Exploitation in Latin America

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Abstract

As science and culture go global, accompanying a global economy, tensions ravage small communities nearly everywhere for basic needs such as food, shelter and health are frequently not met and prosperity is unevenly distributed. The paper addresses one of those basic human needs and rights — health — focusing alternative medicinal practises and predominantly medicinal herbs production, trade and consumption in Latin America, seen as a fair usage of local plant resources by local actors, under ancestral Indian healing traditions aimed at lower income urban households. Research undertaken in four cities, different in size (2 up to 17 millions) and location (North and South America) has shown there are market niches for alternative medicinal trade, income generation at small scale being a fact, and medicinal agricultural ecosystems being sustainable either in rural, periurban, even urban environments. Herbs, fruits, roots, etc. consumed and traded in urban markets come from diverse locations ranging from rainforests to mountainous milieus: 1. Lower and upper Amazonia (Brazil and Peru); 2. Plateaus and Andean high plateaus (Peru and Chile); 3. Forested volcano slopes (Mexico, Peru and Chile); 4. Peri-urban valleys (Chile) and season flooded planes (Brazil). Some plant species are wild and collected under demand, but most of them are grown in peri-urban and rural areas, using less than one-hectare plots and no chemicals at all. Medicinal herbs trade field researched in Lima (Peru), Santiago (Chile), Belen (Brazil) and Mexico City (Mexico), depicts a sustainable use of local and national natural and agricultural resources, whereas targeting lower income populations, contributing to decrease health risks and therefore addressing the issue of poverty in a globalised world.

2 Background and Methods

Portuguese Tropical Institute research project named Noah's ark has been devised as far back as 1998 even though it has been baptised only in 2004. It includes extensive sample research over natural pharmacy conducted by the author together with universities and scientific organizations from 4 countries and big cities: Goeldi Museum at Belen (Brazil); University of Chile, Santiago (Chile); Catholic University, Lima (Peru); and UNAM, Mexico City (Mexico). Survey extracted from Belen's home gardens, a city located in lower Brazilian Amazon, came first. The query was part of an urban and peri-urban agriculture investigation, and the main objective was

to promote food sufficiency in a quite remote and deprived regional metropolis using vacant plots, front-and backyards (MADALENO, 2000). Surprisingly medicinal herbs recorded during fieldwork (555 inquiries and several interviews) were so abundant that they came second as crops in home gardens and peri-urban plots (following fruit culture). Additionally domestic herbal remedies collection was quite prolific, particularly among females interviewed, and very especially the elderly. The catalogue of prescriptions involved ancestral Amazon traditions, European herbal remedies and African medicines for nearly any possible body affection or affliction one might imagine.

During 2002-2003 a joint Portuguese-Chilean team continued the trend in Santiago, uplifting the quantity and quality of plant species registered as being commonly consumed in South America, as enriching a directory of herbal medicines, with particular emphasis on the ones based in Indian healing traditions. Plant therapists, healers, medical doctors and *machis* (shamans) turned out to be the best sources of information driving us to the conclusion that the main herb, roots, fruit, tubers providers were urban markets and not the farmed plots. The next step was to redirect fieldwork and interviewing process, in order to select the most representative urban centres in Latin America, aiming tropical environments but also large metropolis and fairly representative indigenous cultures.

Mexico City and Lima were the targeted locales having been sample researched between 2004 and 2006. Aztec, Nahua, Zapotec (Mexico), Quechua and Aymara healing traditions (Peru) have been added to Brazilian Amazon Indian prescriptions and Mapuche herbal remedies (Chile). About 1,000 medicinal plant cultivation, trade surveys and healing agent interviews have been extracted from the four selected Latin American Metropolis. Above 300 different plant species have been recorded together with a huge range of ethno-medicinal uses.

3 Research Results

Results have shown that people are aware of natural pharmacy limitations in serious sicknesses, even the ones possessing quite low educational level. That's because vaccination campaigns, national healthcare systems are adamant. Of course the option for natural medicines and therapies is in most instances a choice, not a necessity. However, herbal remedies and ancient Indian, European and al. prescriptions target principally lower income groups and Indigenous peoples.

Impressive level of medicinal plant consumption was recorded in Mexico City, the only selected metropolis that possesses a central market solely for herbal remedies trade. *Sonora*, is an enormous bazaar offering two categories of traders: 1. Informal merchants, mostly females, are settled around the market; they usually are micro-farmers either. Two up three times a week, they travel to the Federal District from pueblos located in neighbouring Puebla, Morelos and Mexico states, in order to sell their fresh produce, from 5 to 10 o'clock a. m. After that time, they are obliged to abandon the trade sites, loyalties between "*informales*" and a quite severe (outlaw and repressive) solidarity chain system obliging them to either sell the remainder to the established retailers inside the market or then travel further to *La Merced* or *Jamaica* markets, leaving the ground to informal faster return dealers (clothing, shoes, etc.), the ones who can afford to oversleep and start working later in the morning, allowed to trade at better times for regular urban costumers. According to Mexican statistics

only 3 in 10 women are formally employed in Mexico City. The remainder are housewives, service providers and street traders. The informal retailers earn about 1 US dollar per hour and amount to 31.8% of active residents (INEGI, 2003). 2. Formal traders work inside Sonora every single day of the week, without exception, which is a common fact in all formal market businesses all over Latin America. The vast majority trades dried plant parts and a good range of Indian prescriptions under demand.

Not less imposing was medicinal plant consumption recorded in Belen, particularly old family and domestic remedies. Brazilian Amazon is by far the most biodiverse of all milieus explored, having registered the most uncommon plant species and usages, whose pharmacological activities are among the least lab researched. As to the capital city of Peru, it is one of the most prolific both in terms of dried and fresh species offer and ancestral healing traditions. Santiago top ranks a country that widely ignores ethnicity, even though the metropolis stages a chain of Indigenous Herbal Pharmacies (*Farmacia Herbolaria Mapuche*) uncommon elsewhere in Latin America.

The table depicts ethno-medicinal uses of the most consumed plant species in the 4 selected urban centres: 1. Fake Lemmon Balm (*Toronjil*) is top ranking in Mexico City; 2. Chamomile (*Manzanilla*) is the first option in Lima; 3. Lemmon Balm (*Melisa*), imported from Europe is preferred in Santiago; 4. *Lippia alba* (Erva-Cidreira) the most consumed in Belen. The surprising conclusion is that everybody looks for the same remedy: a reliable infusion for pains (analgesic), a digestive tea ready for use after heavy meals, and a mild sedative that can help to cope with stress, an urban affliction worldwide. The common name is sometimes the same, however nomenclature reveals family, gender and species aren't. Not surprisingly in Mexico and Brazil, where faith in herbal remedies remains unshaken by globalisation, the preferred plant species are endemic, but in biased Peru and Chile the favoured herbs are European and largely recommended by conventional medicine (MADALENO, 2006).

Ethno-Medicinal uses of the most consumed species in Latin American selected cities

Common Name	Botanical Name	Medicinal Applications	Mode of Preparation	Plant part used	Number of Informants
Chamomile (<i>Manzanilla</i>)	<i>Matricaria Chamomilla</i> L.	Stomach aches, conjunctivitis	Infusion	Flowers, leaves and aerial parts	155
Lemmon Balm (<i>Melisa</i>)	<i>Melissa officinalis</i> L.	Indigestion, stress	Infusion	Leaves	125
Boldu Tree (<i>Boldo</i>)	<i>Peumus boldus</i> (Mol.) Lyons	Liver colic	Infusion	Leaves	95
Lemmon Grass (<i>Capim Santo, Yerbaluisa</i>)	<i>Cymbopogon citratus</i> (DC.) Stapf	Stomach and headaches, stress, indigestion, flu	Infusion (aches) and decoction (sedative)	Leaves	146
Lemmon Verbena (<i>Cedrón, Carmelitana</i>)	<i>Lippia citriodora</i> L.	Indigestion, nervous breakdown	Infusion	Leaves	164
Avocado (<i>Palta, Abacate</i>)	<i>Persea americana</i> Mill.	Diarrhoea, urinary problems	Decoction	Leaves, seeds and bark	275

Fake Lemmon Balm (<i>Erva-Cidreira</i>)	<i>Lippa alba</i> HBK	Stress, stomach aches.	Infusion	Leaves	170
Fake Lemmon Balm (<i>Toronjil</i>)	<i>Agastache mexicana</i> Kunth	Indigestion, stress	Infusion	Leaves and aerial plant parts	123
Peppermint and Mint (<i>Hierbabuena, Menta</i>)	<i>Mentha x piperita</i> L., <i>M. spicata</i> L. and <i>M. viridis</i> L.	Stomach pains, skin cancer, indigestion, heart afflictions	Infusion	Leaves	94
Cat's Claw (<i>Uña, Unha de Gato</i>)	<i>Uncaria tomentosa</i> (Willd) D.C.	Rheumatic pains and tumour related aches	Decoction, chewed leaves	Bark extracts, fresh leaves (only in Belen)	78
Citrus (<i>limão, laranja or limones, naranjas</i>)	<i>Citrus vulgaris</i> Risso, <i>C. Medica</i> L., <i>C. sinensis</i> . (L.) Osbeck	Stress, flu, cough, fever, albumin control	Syrup and Infusions	Flowers, leaves, fruits	303
Cashew (<i>Cajueiro</i>)	<i>Anacardium occidentale</i> L.	Headaches, skin cicatrisation, diarrhoea	Infusion, decoction and frictions	Leaves, bark, fruit juice	138
<i>Canarana</i>	<i>Costus spicatus</i> Roscoe	Urinary problems	Infusion	Leaves	55

Surveys 1998-2006

Native plant therapy uses crop production from the following ecosystems: 1. Lower and upper Amazon – Cat's Claw (*Uncaria tomentosa*) is a revelation in terms of cancer treatment; the *Rubiaceae* liana has been confirmed as having proved anti-tumour effects. 2. Plateaus and Andean high plateaus – Llareta (*Azorella compacta*) and Maca (*Lepidium peruvianum*) being some of the extraordinary discoveries, grown above 4,000 metres up Andes Mountains and having been recommended from old Aymara and Inca domains. Llareta grows wild and has proven benefices against rheumatic aches and diabetes (MUÑOZ et al, 2004). 3. Forested volcano slopes (Mexico, Peru and Chile) have nurtured biodiverse species that Indigenous cultures widely suggested to be beneficial, as Aztec Chicalote (*Argemone mexicana*), collected under demand and used in cases of eye diseases. 4. Peri-urban valleys and season flooded planes contain such marvels that one can hardly ignore trees like Mapuche Canelo (*Drimys chilensis*), used against fever in Santiago or Açai (*Euterpe oleracea*), a palm tree abundant in Belen, whose above ground roots cure serious teeth aches. Important new findings concerning the anti-herpes simplex virus activity of Mango tree (*Mangifera indica*), a species that shades Belen's streets, as well as reference to new research on anti-inflammatory and immunomodulatory activities present in the bark (ROSS, 2003), have given strength to healing Brazilian traditions that sustain juicy fruits give vitamins and the bark grants life, claiming internal and external applications to cure cancer.

4 Conclusions

The comparative study clearly shows medicinal herb consumption to be representative in the selected Latin American countries, particularly among the destitute and aboriginal peoples whose ancestral healing traditions were not completely abandoned in favour of Western culture approaches to body and soul treatment. In most cases old herbal remedies are complimentary, unconventional healers and plant therapists being tolerated both in Mexico and Brazil, even inside hospitals. Yet in about 10 to 20% of

instances, teas are consumed, baths and body frictions are applied on a daily basis or in case of afflictions, as the first option. In Lima, medical doctors that only recommend plant therapies are quite common. In Santiago of Chile, conventional medicine is preferred but whenever the affliction is traumatic, people consult Indian *machis* and buy remedies from Peruvian herb import businesses.

Empirical results summarised above indicate the allocation of medicinal plant crops inside and around cities to be efficient both because they are frequently used in domestic remedies and for having better market access. It suggests that urban agriculture should be further supported by local and national governments in order to improve productivity and to give households easy access to inputs such as seeds, plant nurseries, organic fertilisers, technical advice, etc. Results indicate medicinal herb market niche to be wealthy enough to sustain the option for urban commercial agriculture of species with curative value.

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