

An ethnobotanical survey of medicinal plants used in Loja and Zamora-Chinchipe, Ecuador

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Abstract

This paper reports the results of an ethnobotanical survey on the uses of medicinal plants by inhabitants of two southern Ecuadorian provinces, namely, Loja and Zamora-Chinchipe. In this region, two surviving ethnic groups, the Saraguros and the Shuars, and the descendants of a now extinct culture, the Paltas, have been identified. The present study reports a total of 275 plant species, having 68 different therapeutical uses.

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1. Introduction

Since ancient times, several societies have resorted to nature, mainly to plants as medical and health sources. Today, a great percentage of the world population, in particular in developing countries, uses plants for facing primary needs of medical assistance.

According to the WHO (Roy Chaudhury, 1992; WHO, 1993), 80% of the world population makes use of natural remedies and traditional medicines, and Ecuador is not an exception. At present, the country's national sanitary system is malfunctioning and the difficult economical situation prevents a large part of the population from having access to common health practices.

Nowadays, Ecuador – located in Equatorial America – is considered one of the countries possessing the highest biodiversity in the world (Jorgensen and León-Yáñez, 1999), and where the local population maintains their ancestral traditions in the use of natural remedies (Naranjo and Escaleras, 1995).

In fact, *ca.* 30% of the whole population belongs to different indigenous groups (Benítez and Garcés, 1988), and ethnobotanical knowledge is still transmitted from generation to generation, especially by mouth.

This study was carried out in two southern provinces of Ecuador, namely Loja and Zamora-Chinchipe (Fig. 1).

Loja is crossed by the Andean mountain range that gives rise to a very irregular topography and it is the cause of a difficult access. Altitudes vary between 700 and 3700 m above sea level. The province shows a considerable variety of climates within its boundaries. Actually, a tropical dry climate prevails in the west region, whereas the central region has a subtropical humid climate, and the eastern region is Andean temperate.

Loja comprises a total area of 10.793 km² and *ca.* 400,000 inhabitants. The province has abundant hydrographic resources, especially rivers, among which Puyango, Catamayo and Macará, the most important, flow into the Pacific catchment basin. Another large river, the Zamora, flows, instead, into the Amazon basin.

The province of Zamora-Chinchipe is located between the foothills of the Andes and Amazonian rainforests, and, like Loja, has an irregular topography. Zamora, Chinchipe and Nangaritza are the largest rivers, and all flow into the Amazon River. The vegetation is abundant, due to a temperate climate, which changes from humid to semi-humid. The province comprises a total area of 16.559 km² and *ca.* 60,000 inhabitants.

Ethnologically, Loja is characterized by an extensive cross-breeding, a remarkable acculturation of the native inhabitants, the maintenance of a Caucasian race, and the existence of a few aboriginal races, in particular located in the Canton Saraguro in

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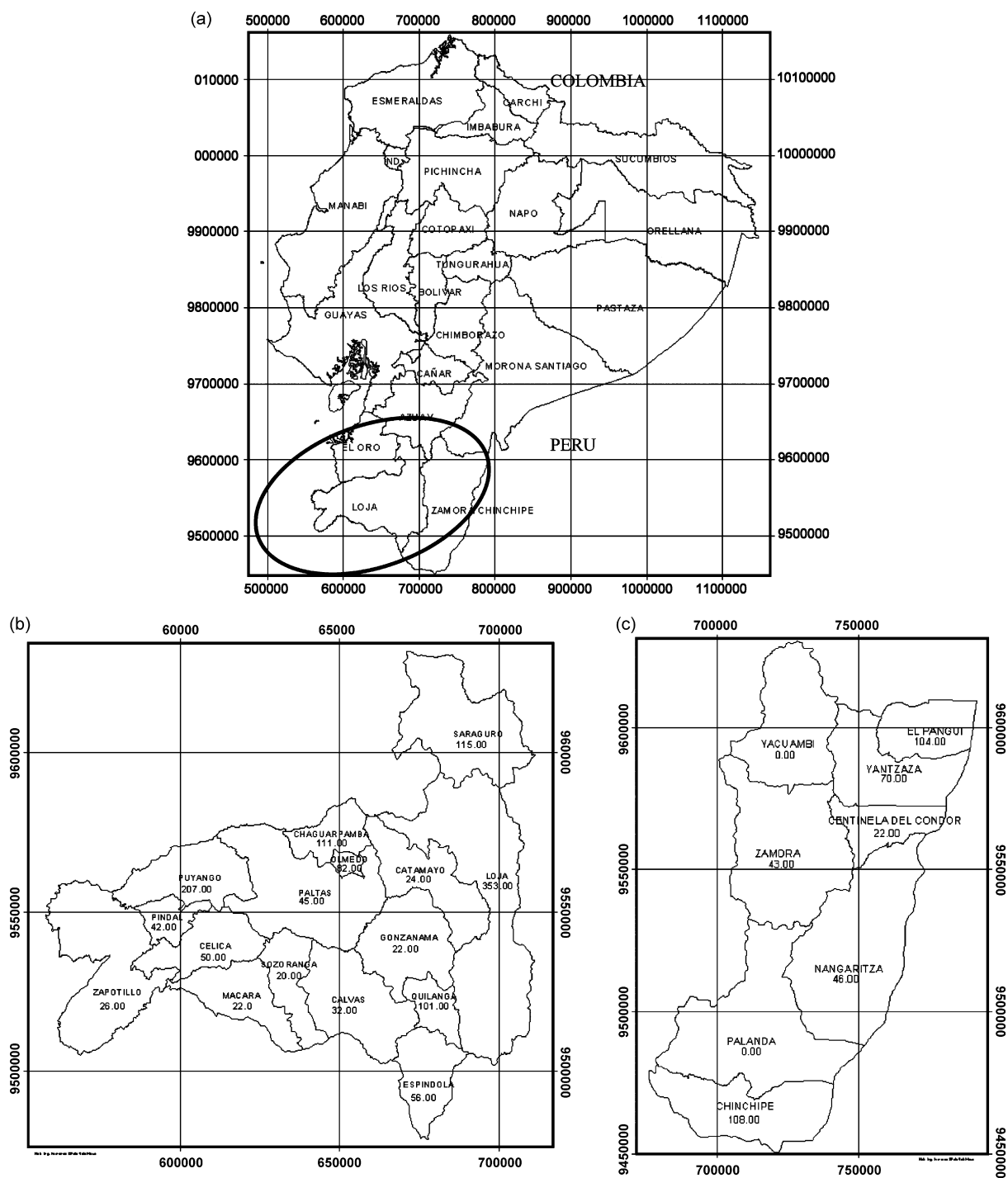


Fig. 1. Regions where the present study has been carried out: provinces of Loja and Zamora. (a) Their location in Ecuador, (b, c) administrative departments of each province. For each department, the number of ethnobotanical interviews has been indicated. *Source:* Sistemas de Información Geográfica (SIG), Universidad Técnica Particular de Loja.

the north of the province. The Saraguros form one of the best organized ethnical groups in Ecuador, having their own culture, language, and social habits. Although their origin is uncertain, they are generally considered to have been forced by the Incas to reach Ecuador from far away. The “ethnic mobilization” was, indeed, commonly practised by the great Inca Tupac Yupanqui, as a strategic means to secure the peace inside the Inca Empire. According to Uhle (1923), a small group of the Paltas, the

autochthonous inhabitants of the Loja region, were transferred to Bolivia and, at the same time, a certain number of inhabitants of the Bolivian High Plateau were relocated in the present region of Saraguro. The Saraguros language is the Runa Shimi (Kiwcha) which belongs to the Kiwcha nationality. These communities have conserved the majority of their lands for centuries; moreover, in the 20th century, they extended their territories to the province of Zamora-Chinchipe. At present, the Saraguros live

on agriculture and cattle breeding, using ancestral techniques (Benítez and Garcés, 1988). Except for the Saraguros, most of the Province is inhabited by “mestizos” and groups of farmers living in communities, who are considered the descendants of the Paltas, the ethnic group established in this area before the Incas domination and the Spanish arrival.

As a matter of fact, the Paltas denomination is misleading, since this name was possibly a generic noun used by the Spaniards to indicate all the ethnic groups living in southern Ecuador (Jaramillo, 1955; Benítez and Garcés, 1988). According to Pérez (1979, 1984) the Palta culture was likely originated in east Ecuador, following the migration to those lands of the “jíbaros”, who are nowadays named Shuars. This hypothesis is, however, not yet completely confirmed by archaeological studies and another theory points even at the Mayan origin of this culture (Gallardo, 1960). Some legends and oral beliefs confirm a long standing tradition in the use of medicinal plants by the Paltas, and the same vegetal species have been used for centuries and are still used today (Gallardo, 1985). For example, the use of *Cinchona* spp. by the Paltas is very well documented. In fact, according to some chronicles, around the year 1640, Don Juan López de Cañizares, an important leader of the city of Loja, was cured of paludism with this plant by a young native. Following his miraculous recovery, López informed the Countess of Chinchón about the way he had been cured of serious fevers; the news rapidly spread through the people and the great efficacy of the prodigious plant eventually led to its commercialization (Gupta, 1995; Anda, 2002). It is also worthy of mention that *Marsdenia condurango*, a plant very well known for the sedative and antineoplastic properties, was discovered in Loja (Gupta, 1995).

The province of Zamora-Chinchipe is inhabited by the Shuars and, more recently, by peasants migrating from other Ecuadorian regions. The true origin of the Shuar culture is not known; according to some authors (Gallardo, 1968, 1973), they are the result of a fusion of an Amazonian group with another of Central American origin. The Shuars remained isolated for a long time, because of their habitat and their warrior fame. Even the Incas, led by Tupac Yupanqui, could not subdue them, nor could a Spanish expedition led by Hernando de Benavente in 1549. After continuous unsuccessful attempts, the Shuars were finally colonized in the 20th century, in consequence of the great interest in quinine, rubber and cinnamon extraction.

Medicinal and hallucinogenic plants have traditionally been consumed by the inhabitants of these regions for centuries. The use of guayusa, matico, guabiduca, curarina, condurango is, even today, an important aspect of their cultural traditions and has been reported in the literature (Gallardo, 1968).

In Ecuador there have been done several ethnobotanical studies; for example, Cerón and Montalvo (1998) published a book about the ethnobotanical aspects of the “Huaróni” in a specific zone of the north-east of Ecuador. Villacrés (1995) published a study on the bioactivity of Amazonian plants of the Province of Napo. Additionally, Iglesias (2002) published a book on cultural practices of the Quichua society of Napo.

Furthermore, some other publications (Naranjo and Escaleras, 1995; Naranjo and Crespo, 1997) report different

studies done on Ecuadorian medicinal plants, dealing with different aspects as ethnomedicine, anthropology, phytochemistry, etc.

Despite the existence of a rich ethnic heritage in the region of our interest, only a few dedicated ethnobotanical studies have been published so far. Recently, Bejár et al. (2002) and, Busmann and Sharon (2006) independently, carried out a study in a few localities of the province of Loja, reporting the uses and growing sites of more than 200 medicinal plants.

2. Methodology

The present research was done between September 2002 and December 2003, by carrying out an ethnobotanical survey (Vogel, 2000) with adult people, who live in the area under study and know and practice the use of medicinal plants. One thousand five hundred ninety-three inhabitants were interviewed in the selected areas; 82% of the interviews were done in the Province of Loja and 18% in the Province of Zamora-Chinchipe. One hundred fifteen interviews (7%) were given in the zone under the Saraguro influence, and 196 (12%) were granted in the Shuar zone. The remaining 81% interviews were with farmers and peasants who, for the most part, are “mestizos” or Palta descendants in the region of Loja. Mestizos informants are aware of publication of these results, whereas Shuar and Saraguros informants were contacted through authorized representatives, with the possibility to perform more accurate studies for recovering, protecting and a sustainable use of their traditional knowledge.

The collected data were processed and a preliminary list of medicinal plants, with their vernacular names, was made; growing places, therapeutical applications, parts used, plant development, forms of preparation, and dosages were also included. The data are shown in Table 1. With these results in hand, we then proceeded to the collection and identification of the different plant species. For every plant, a voucher specimen was collected, identified by the “Herbarium Reinaldo Espinoza” (Universidad Nacional de Loja), and deposited at the Herbarium of the “Planta de Productos Naturales” at the Universidad Técnica Particular de Loja. The scientific nomenclature was recorded according to the Catalogue of the Vascular Plants of Ecuador (Jorgensen and León-Yáñez, 1999) and the additions published on “*Cinco años de adiciones a la flora del Ecuador*” (Ulloa Ulloa and Neill, 2005).

3. Results and discussion

The ethnobotanical survey outlined in this paper gave us a complete picture about the natural remedies used by the inhabitants of the provinces of Loja and Zamora-Chinchipe in southern Ecuador. Two hundred seventy-five different plants have been identified to which several medicinal properties are attributed; their therapeutical uses and forms of employment have also been recorded. Of the total number of plants, 152 are native, 57 are introduced, 5 are traditionally cultivated, and 8 are endemic to Loja or Zamora-Chinchipe, while information of the remaining 53 is incomplete in specialized publications (Jorgensen and León-Yáñez, 1999). This long list of plants comprises species

Table 1
Therapeutical applications of plants used in the traditional medicine of peoples of Loja and Zamora (Ecuador)

No.	Scientific name	Family	Herbarium voucher	Vernacular name(s)	Therapeutical applications	Parts used	Plant development	Plant state	Preparation	Mode of use
1	<i>Abutilon striatum</i> Dicks. ex Lindl.	Malvaceae	PPN-ma-002	Malva goma	Headache	Flower	Mature	Fresh	Aqueous infusion	Drink
2	<i>Acacia macracantha</i> Humb. & Bonpl. ex Willd.	Mimosaceae	PPN-mi-004	Faique	Conjunctivitis, kidney problems	Bark	Mature	Fresh	Decoction	Drink
3	<i>Acmella alba</i> (L'Hér.) R.K. Jansen	Asteraceae	PPN-as-023	Botón amarillo	Tooth decay, hepatic pain, disinfectant, healing of wounds	Leaf, flower	Mature	Fresh	Aqueous infusion, mixed with other plants	Drink, topical application
4	<i>Acmella oppositifolia</i> (Lam.) R.K. Jansen	Asteraceae	PPN-as-004	Botoncillo	Hair tonic, analgesic, astringent, tooth decay	Flower	Mature	Fresh	Aqueous infusion	Drink
5	<i>Adenostemma lavenia</i> (L.) Kuntze	Asteraceae	PPN-as-027	Curarina	Used in preparation of antiophidic serum	Stem, leaf	Tender and mature	Fresh	Juice	Drink, direct application
6	<i>Adiantum concinnum</i> Humb. & Bonpl. ex Willd.	Pteridaceae	PPN-pt-002	Culantrillo	Stomach pain, hepatic pain	Leaf, flower	Mature	Fresh	Aqueous infusion	Drink
7	<i>Adiantum poiretii</i> Wikstr.	Pteridaceae	PPN-pt-001	Culantrillo	Asthma, diabetes, influenza, pneumonia, kidney problems	Stem, leaf, flower	Mature and in floration	Fresh	Aqueous infusion	Drink
8	<i>Agave americana</i> L.	Agavaceae	PPN-ag-001	Méjico	Internal inflammation, kidney problems	Juice	Mature	Fresh	Juice	Drink
9	<i>Ageratum conyzoides</i> L.	Asteraceae	PPN-as-010	Pedorrera	Stomach pain	Leaf, flower	Mature	Fresh	Aqueous infusion	Drink
10	<i>Albizia</i> sp. Durazz.	Mimosaceae	PPN-mi-001	Sekemur	Hepatic pain	Leaf	Mature	Fresh	Aqueous infusion	Drink
11	<i>Alcea rosea</i> L.	Malvaceae	PPN-ma-001	Malva	Kidney problems, used as tonic	Entire plant	Mature	Fresh	Pounded	Topical application
12	<i>Alnus acuminata</i> Kunth.	Betulaceae	PPN-be-001	Aliso	Tonsillitis, astringent, headache, lacerations, dermatitis, rheumatism	Leaf, bark	Mature	Fresh	Pounded, and mixed in aqueous preparation of other plants	Topical application
13	<i>Aloysia triphylla</i> (L'Hér.) Britton	Verbenaceae	PPN-ve-002	Cedrón	Fever, headache, diuretic	Leaf, flower	Mature	Fresh and dried	Aqueous infusion	Drink
14	<i>Alternanthera porrigens</i> var. <i>piurensis</i> (Standl.) Eliasson	Amaranthaceae	PPN-am-004	Lancetilla grande	Menstruation pain, pneumonia, influenza, hepatic pain, kidney problems, fever, gastritis	Root, leaf, flower	Tender and mature	Fresh	Aqueous infusion and decoction	Drink
15	<i>Alternanthera porrigens</i> var. <i>porrigens</i> (Jacq.) Kuntze	Amaranthaceae	PPN-am-006	Lancetilla grande	Hepatic pain, influenza, kidney problems	Leaf, flower	Mature	Fresh	Aqueous infusion	Drink
16	<i>Alternanthera</i> sp. Forssk.	Amaranthaceae	PPN-am-005	Lancetilla pequeña	Kidney diseases	Root	Mature	Fresh	Aqueous infusion	Drink
17	<i>Alloplectus</i> sp. Mart.	Gesneriaceae	PPN-gs-001	Mangocua	“Espanto”	Leaf	Mature	Fresh	Directly used	Direct application
18	<i>Amaranthus cruentus</i> L.	Amaranthaceae	PPN-am-002	Ataco	Diuretic, kidney problems	Stem, leaf	Mature	Fresh	Decoction	Drink
19	<i>Amaranthus hybridus</i> L.	Amaranthaceae	PPN-am-007	Bledo	Internal inflammation, cold, headache, stomach pain	Leaf, flower	Mature	Fresh	Aqueous infusion	Drink
20	<i>Ambrosia arborescens</i> Mill.	Asteraceae	PPN-as-022	Marco	“Espanto”, rheumatism, postpartum bathe	Leaf	Mature	Fresh	Decoction	Bathe
21	<i>Ambrosia artemisioides</i> Meyen & Walpers ex Meyen	Asteraceae	PPN-as-018	Altamisa	Menstruation pain, dermatitis, internal infections, kidney problems	Stem	Mature	Fresh	Decoction	Drink

22	<i>Amicia glandulosa</i> Kunth.	Fabaceae	PPN-fa-006	Orozos	Bronchitis, internal inflammation, cough	Root	Mature	Fresh	Aqueous infusion	Drink
23	<i>Annona muricata</i> L.	Annonaceae	PPN-an-001	Guanábana	Rheumatism	Leaf	Mature	Fresh	Heated	Topical application
24	<i>Apium graveolens</i> L.	Apiaceae	PPN-ap-009	Apio	Antacid, stomach pain, menstruation pain, diarrhoea, kidney problems	Stem, leaf	Mature	Fresh	Aqueous infusion	Drink
25	<i>Apium leptophyllum</i> (Pers.) F. Muell.	Apiaceae	PPN-ap-006	Culantrillo gateador	Gangrene, hepatic pain, stomach pain	Leaf	Tender	Fresh	Juice	Drink
26	<i>Argemone mexicana</i> L.	Papaveraceae	PPN-pv-001	Cardo santo	Internal infections, antiparasite	Leaf	Mature	Fresh	Aqueous infusion	Drink
27	<i>Arracacia xanthorrhiza</i> Bancr.	Apiaceae	PPN-ap-001	Zanahoria blanca	Stomach pain	Leaf	Mature	Fresh	Aqueous infusion	Drink
28	<i>Artemisia sodiroi</i> Hieron.	Asteraceae	PPN-as-021	Ajenjo	Internal inflammation, stomach pain, hepatic pain, fever, internal infections, kidney problems, cough	Leaf	Tender	Fresh	Aqueous infusion	Drink
29	<i>Artocarpus altilis</i> (Parkinson) Fosberg	Moraceae	PPN-mo-003	Fruto del pan	Diabetes, high cholesterol	Leaf	Mature	Fresh	Aqueous infusion	Drink
30	<i>Baccharis genistelloides</i> (Lam.) Pers.	Asteraceae	PPN-as-013	Tres filos	Lose weight, stomach pain, diabetes, diuretic, influenza, and kidney problems	Stem, leaf	Tender and mature	Fresh	Aqueous infusion	Drink
31	<i>Baccharis latifolia</i> (Ruiz & Pav.) Pers.	Asteraceae	PPN-as-007	Chilca negra	Internal and external inflammation, stomach pain, hepatic pain, fractures, gangrene, rheumatism	Leaf	Mature	Fresh	Infusion and pounded	Drink, topical application
32	<i>Baccharis obtusifolia</i> Kunth.	Asteraceae	PPN-as-014	Chilca redonda	“Espanto”, antimycotic, cold, rheumatism	Entire plant	Mature	Fresh	Pounded	Topical application and drink
33	<i>Banisteriopsis caapi</i> (Spruce ex Griseb.) C.V. Morton	Malpighiaceae	PPN-mp-001	Ayahuasca	Headache, disinfectant, healing of wounds, rheumatism, liver, kidney problems	Stem	Mature	Fresh	Decoction	Drink, topical application
34	<i>Barnadesia arborea</i> Kunth.	Asteraceae	PPN-as-015	Clavelillo	Dermatitis, influenza	Flower	Floration	Fresh	Pounded	Topical application by rubbing
35	<i>Bauhinia tarapotensis</i> Benth.	Caesalpiniaceae	PPN-ce-001	Pata de vaca	Diarrhoea	Leaf	Mature	Fresh	Aqueous infusion	Drink
36	<i>Begonia fischeri</i> Schrank	Begoniaceae	PPN-bn-001	Begonia	Stomach pain	Leaf	Mature	Fresh	Aqueous infusion	Drink
37	<i>Bejaria aestuans</i> L.	Ericaceae	PPN-er-001	Payamo	Arthritis	Leaf	Mature	Fresh	Aqueous infusion	Drink
38	<i>Bejaria resinosa</i> Mutis ex L.f.	Ericaceae	PPN-er-002	Payama	Arthritis, kidney pain, relaxant, heart problems	Flower	Floration	Fresh	Aqueous infusion	Drink
39	<i>Bidens andicola</i> Kunth.	Asteraceae	PPN-as-005	Nachi	Headache, sunstroke	Entire plant	Mature	Fresh	Juice	Drink
40	<i>Bidens pilosa</i> L.	Asteraceae	PPN-as-002	Guichingue	Stomach pain, menstruation pain, scurvy, influenza, prostate disturbances, pneumonia	Leaf, flower	Mature	Fresh	Aqueous infusion	Drink
41	<i>Bixa orellana</i> L.	Bixaceae	PPN-bi-001	Achiote	Tonic, bronchitis, arthritis	Leaf	Mature	Fresh	Aqueous infusion	Drink
42	<i>Boehmeria ramiflora</i> Jacq.	Urticaceae	PPN-ur-003	Hierba de la guanchaca	Dermatitis	Stem, leaf	Mature	Fresh	Juice	Topical application
43	<i>Bomarea setacea</i> (Ruiz & Pav.) Herb.	Alstroemeriaceae	PPN-at-001	Hierba del diablo	“Espanto”	Leaf	Mature	Fresh	Aqueous infusion	Drink

Table 1 (Continued)

No.	Scientific name	Family	Herbarium voucher	Vernacular name(s)	Therapeutical applications	Parts used	Plant development	Plant state	Preparation	Mode of use
44	<i>Borago officinalis</i> L.	Boraginaceae	PPN-bo-001	Borraja	Hepatic pain, menstruation pain, conjunctivitis, burnings, kidney pain, influenza, headache	Leaf, flower	Mature	Fresh	Aqueous infusion	Drink
45	<i>Borreria laevis</i> (Lam.) Griseb.	Rubiaceae	PPN-ru-001	Monte de la araña	“Espanto”	Leaf	Mature	Fresh	Pounded	Topical application
46	<i>Brachyotum</i> sp. (A. DC.) Triana	Melastomataceae	PPN-me-001	Quilliyuyo	Stomach pain	Leaf	Mature	Fresh	Aqueous infusion	Drink
47	<i>Brassica napus</i> L.	Brassicaceae	PPN-br-003	Yuyo	Sedative	Leaf	Mature	Fresh	Aqueous infusion	Drink
48	<i>Briza monandra</i> (Hack.) Pilg.	Poaceae	PPN-po-003	Atalpa micuna	Stomach pain, hepatic pain	Stem and leaf	Mature	Fresh	Aqueous infusion	Drink
49	<i>Brugmansia candida</i> Pers.	Solanaceae	PPN-so-011	Guando	Disinfectant, bone fractures, antimycotic, rheumatism, kidney	Flower	Mature	Fresh	Juice	Bathe affected part, drink
50	<i>Bryophyllum pinnatum</i> (Lam.) Oken	Crassulaceae	PPN-cr-002	Monte del aire	“Blood purification”, cancer, menstruation pain, “espanto”	Stem, leaf	Mature	Fresh	Aqueous infusion	Drink
51	<i>Buddleja americana</i> L.	Buddlejaceae	PPN-bd-001	Salvia	“Espanto”, relaxant, diarrhoea, parasite, hepatic pain, kidney pain, headache	Leaf	Mature	Fresh	Aqueous infusion	Drink
52	<i>Bursera graveolens</i> (Kunth.) Triana & Planch.	Burseraceae	PPN-bu-001	Palo santo	Insecticide, dermatitis	Leaf, bark	Mature	Dried	Burning, aqueous infusion	Burning/drink
53	<i>Calceolaria tripartita</i> Ruiz & Pav.	Scrophulariaceae	PPN-sc-002	Hierba del sapo	Dermatitis	Leaf, flower	Mature	Fresh	Aqueous infusion	Drink
54	<i>Callisia gracilis</i> (Kunth.) D.R. Hunt	Commelinaceae	PPN-co-003	Calcha	Hair tonic, high blood pressure, rheumatism	Leaf, flower	Tender and mature	Fresh	Aqueous infusion	Drink
55	<i>Callisia repens</i> (Jacq.) L.	Commelinaceae	PPN-co-001	Calcha	Fever, gangrene, gastritis, high blood pressure, internal infections, relaxant, rheumatism	Leaf	Mature, tender	Fresh	Aqueous infusion	Drink
56	<i>Campyloneurum</i> sp. C. Presl	Polypodiaceae	PPN-pp-001	Calaguala	Antiinflammatory, “espanto”, pneumonia, kidney pain	Entire plant	Mature	Fresh	Aqueous infusion	Drink
57	<i>Canna indica</i> L.	Cannaceae	PPN-cn-001	Achira negra	Relaxant, stomach pain	Flower	Floration	Fresh	Juice	Drink
58	<i>Cardamine bonariensis</i> Pers.	Brassicaceae	PPN-br-005	Berro negro	Influenza, pneumonia, cough	Leaf	Mature	Fresh	Decoction	Drink
59	<i>Cavendishia bractetata</i> (Ruiz & Pav. ex J.St.-Hil.) Hoerold	Ericaceae	PPN-er-003	Zalapa	Rheumatism	Leaf	Mature	Fresh	Aqueous infusion	Drink
60	<i>Ceiba samauma</i> (Mart.) K. Schum.	Bombacaceae	PPN-bm-001	Seibo	Internal inflammation, kidney pain	Stem	Tender and mature	Fresh	Aqueous infusion	Drink
61	<i>Celtis iguanaea</i> (Jacq.) Sarg.	Ulmaceae	PPN-ul-001	Tsachik	Hepatic pain, kidney pain	Leaf, flower	Mature	Fresh	Aqueous infusion	Drink
62	<i>Centaurium erythraea</i> Rafn.	Gentianaceae	PPN-gn-001	Canchalagua	Influenza, internal infections, blood purification, kidney problems	Stem, leaf	Mature	Fresh	Aqueous infusion	Drink
63	<i>Cestrum peruvianum</i> Willd. ex Roem. & Schult.	Solanaceae	PPN-so-001	Sauco	Blood purification, psicomotor development	Leaf	Mature	Fresh	Infusion and pounded	Direct application/ drink

64	<i>Cestrum racemosum</i> Ruiz & Pav.	Solanaceae	PPN-so-010	Sauco negro	Tooth decay, headache, stomach pain, fever, gastritis, influenza, high blood pressure, internal and external infections, relaxant, cold	Entire plant	Mature	Fresh	Aqueous infusion	Drink, direct application by rubbing
65	<i>Cestrum sendtnerianum</i> C. Martius	Solanaceae	PPN-so-003	Sauco negro	Purgative, head pain, stomach pain, fever, gangrene, influenza, internal infections, rheumatism, cough	Leaf, flower	Mature	Fresh	Aqueous infusion	Drink
66	<i>Cestrum tomentosum</i> L. f.	Solanaceae	PPN-so-008	Sauco lanudo	Influenza	Leaf, flower	Floration	Fresh	Aqueous infusion	Drink
67	<i>Cinchona officinalis</i> L.	Rubiaceae	PPN-ru-002	Cinchona	Stomach pain, fever, malaria, antimycotic	Bark, leaf	Tender and mature	Fresh	Aqueous infusion	Drink, topical application
68	<i>Citrus limonum</i> Risso.	Rutaceae	PPN-rt-002	Limón	Relaxant	Leaf	Tender	Fresh	Juice	Drink
69	<i>Citrus sinensis</i> (L.) Osbeck	Rutaceae	PPN-rt-003	Naranja agria	Hair tonic, cold, kidney	Fruit	Mature	Fresh	Pounded/juice	Direct application by rubbing/drink
70	<i>Clethra revoluta</i> (Ruiz & Pav.) Spreng.	Clethraceae	PPN-cl-001	Almisque	Tonsillitis, asthma, dermatitis	Stem, leaf, flower	Mature	Fresh	Aqueous infusion	Drink, topical application
71	<i>Clinopodium taxifolium</i> (Kunth.) Harley	Lamiaceae	PPN-la-002	Poleo de castilla	“Espanto”, internal inflammation, malaria, cough	Stem, leaf	Mature	Fresh	Aqueous infusion	Drink
72	<i>Conyza canadensis</i> (L.) Cronquist	Asteraceae	PPN-as-036	Contrahierba	Stomach pain, hepatic pain, cough	Flower	Mature	Fresh	Aqueous infusion	Drink
73	<i>Costus comosus</i> (Jacq.) Roscoe	Costaceae	PPN-cs-001	Caña	Headache, hepatic pains, diabetes, diuretic, influenza, kidney problems	Stem	Mature and floration	Fresh	Decoction	Drink
74	<i>Crassula</i> sp. L.	Crassulaceae	PPN-cr-005	Siempre viva	Ear infections	Root	Floration	Fresh	Decoction	Drink
75	<i>Crotalaria</i> sp. L.	Fabaceae	PPN-fa-001	Fenogreco	Cancer, stomach pain, hepatic pain	Leaf	Mature	Fresh	Aqueous infusion	Drink
76	<i>Croton mutisianus</i> Kunth.	Euphorbiaceae	PPN-eu-004	Sangre de drago	Internal and external inflammation, disinfectant, healing of wounds, gastritis	Latex	Mature	Fresh	Mixed with water	Drink, topical application
77	<i>Croton lechleri</i> Müll. Arg.	Euphorbiaceae	PPN-eu-003	Sangre de drago	Hepatic pain, dermatitis, disinfectant, healing of wounds, diuretic	Latex	Mature	Fresh	Directly used	Drink, topical application
78	<i>Croton wagneri</i> Müll. Arg.	Euphorbiaceae	PPN-eu-001	Moshquera	Tonsillitis, antiacid, stomach pain, diabetes, fever, gastritis	Leaf	Floration	Fresh	Aqueous infusion	Drink
79	<i>Cucurbita ficifolia</i> Bouché	Cucurbitaceae	PPN-cu-001	Zambo	Antiparasite, hair tonic	Seed	Mature	Fresh	Pounded	Ingestion, topical application
80	<i>Cucurbita</i> sp. L.	Cucurbitaceae	PPN-cu-002	Sampu	Antiparasite	Latex	Mature	Fresh	Mixed with water	Drink
81	<i>Cuphea racemosa</i> (L. f.) Spreng.	Lythraceae	PPN-ly-001	Hierba del toro	Urinary tract infections	Leaf	Mature	Fresh	Aqueous infusion	Drink
82	<i>Cupressus lusitanica</i> Mill.	Cupressaceae	PPN-cp-001	Cipré	Dermatitis	Leaf	Mature	Fresh	Aqueous infusion	Drink
83	<i>Cymbopogon citratus</i> (DC.) Stapf	Poaceae	PPN-po-001	Hierbaluisa	Gastritis, relaxant, stomach pain, diarrhoea	Leaf	Mature	Fresh	Aqueous infusion	Drink
84	<i>Cynanchum</i> sp. L.	Asclepiadaceae	PPN-al-001	Cola de caballo	Kidney problems	Stem	Mature	Fresh	Aqueous infusion	Drink
85	<i>Cynodon dactylon</i> (L.) Pers.	Poaceae	PPN-po-002	Gramma dulce	Hepatic pain, kidney problems	Root, stem, leaf	Mature	Fresh	Decoction	Drink
86	<i>Cyperus</i> sp. L.	Cyperaceae	PPN-cy-001	Díctamo real	Dermatitis, diarrhoea, kidney problems	Stem and leaf	Tender	Fresh	Aqueous infusion	Drink

Table 1 (Continued)

No.	Scientific name	Family	Herbarium voucher	Vernacular name(s)	Therapeutical applications	Parts used	Plant development	Plant state	Preparation	Mode of use
87	<i>Cyphomandra betacea</i> (Cav.) Sendtn	Solanaceae	PPN-so-014	Tomate de árbol	Tonsillitis, high cholesterol, stomach pain	Fruit	Mature	Fresh	Juice	Drink
88	<i>Chenopodium album</i> L.	Chenopodiaceae	PPN-ch-002	Palitaria	Analgesic, anti-inflammatory, antiparasite, strokes, internal infection	Leaf	Mature	Fresh	Aqueous infusion	Drink and direct application
89	<i>Chenopodium ambrosioides</i> L.	Chenopodiaceae	PPN-ch-001	Paico	Antiparasite, analgesic, lacerations, internal inflammation, stomach pain	Seed, leaf	Mature	Fresh	Juice	Drink
90	<i>Chuquiraga jussieui</i> J. F. Gmel.	Asteraceae	PPN-as-001	Chuquiragua	Allergy, internal infections, malaria	Entire plant	Mature	Fresh	Decoction	Drink
91	<i>Daucus montanus</i> Humb. & Bonpl. ex Spreng.	Apiaceae	PPN-ap-005	Cominillo	Internal infections, hepatic pain, stomach pain	Stem, leaf, flower	Mature	Fresh	Aqueous infusion	Drink
92	<i>Desmodium molliculum</i> (Kunth.) DC.	Fabaceae	PPN-fa-011	San Antonio	Disinfectant, healing of wounds, kidney problems	Entire plant	Mature	Fresh	Aqueous infusion	Drink
93	<i>Desmodium</i> sp. Desv.	Fabaceae	PPN-fa-007	Hierba de Infante	Healing of wounds	Leaf	Mature	Fresh	Boiled	Direct application
94	<i>Desmodium tortuosum</i> (Sw.) DC.	Fabaceae	PPN-fa-015	San Antonio	Menstruation pain, stomach pain, psychomotor development	Leaf, stem	Mature	Fresh	Aqueous infusion	Drink
95	<i>Dicliptera</i> sp. Juss.	Acanthaceae	PPN-ac-001	Chinchimaní	Blood purification	Leaf	Mature	Fresh	Juice	Drink
96	<i>Dodonea viscosa</i> Jacq.	Sapindaceae	PPN-sa-002	Chamana	Internal inflammation	Leaf	Mature	Fresh	Aqueous infusion	Drink
97	<i>Echeveria quitensis</i> (Kunth.) Lindl.	Crassulaceae	PPN-cr-001	Condorcol	Cancer	Leaf	Mature	Fresh	Aqueous infusion	Drink
98	<i>Elleanthus aurantiacus</i> (Lindl.) Rchb. f.	Orchidaceae	PPN-or-003	Guabiduca silvestre	Hepatic pain, kidney problems	Leaf	Mature	Fresh	Aqueous infusion	Drink
99	<i>Epidendrum fimbriatum</i> Kunth.	Orchidaceae	PPN-or-001	Flor de cristo	Kidney problems	Leaf, flower	Mature	Fresh	Infusion	Drink
100	<i>Epidendrum jamiesonis</i> Rchb. f.	Orchidaceae	PPN-or-002	Flor de Cristo	Kidney problems	Leaf	Mature	Fresh	Aqueous infusion	Drink
101	<i>Epidendrum</i> sp. L.	Orchidaceae	PPN-or-004	Espíritu de mujer	Influenza, fever, conjunctivitis	Leaf, flower	Mature	Fresh	Aqueous infusion	Bathe, drink
102	<i>Equisetum bogotense</i> Kunth.	Equisetaceae	PPN-eq-001	Cola de caballo	Antiparasite, diuretic, kidney problems	Entire plant with other ingredients	Mature	Fresh	Aqueous infusion	Drink
103	<i>Equisetum giganteum</i> L.	Equisetaceae	PPN-eq-002	Cola de caballo	Diuretic, kidney problems, stomach pain	Entire plant	Mature	Fresh	Aqueous infusion	Drink
104	<i>Eriobotrya japonica</i> (Thunb.) Lindl.	Rosaceae	PPN-ro-006	Nispero	Antacid, high cholesterol, diuretic, gastritis, influenza, prostate disturbances, pneumonia, rheumatism, kidney problems	Leaf, flower	Mature	Fresh	Aqueous infusion	Drink
105	<i>Erodium cicutarium</i> (L.) L' Hér. ex Aiton	Geraniaceae	PPN-ge-002	Aujilla	Stomach pain, hearth problems, influenza	Stem, leaf	Mature	Fresh	Aqueous infusion	Drink
106	<i>Erodium moschatum</i> (L.) L'Hér. ex Aiton	Geraniaceae	PPN-ge-007	Aujilla	Menstruation pain, influenza, pneumonia, cough	Leaf	Mature	Fresh	Aqueous infusion	Drink

107	<i>Eryngium humile</i> Cav.	Apiaceae	PPN-ap-008	Achiote del monte	Relaxant, arthritis	Leaf	Mature	Fresh	Aqueous infusion	Drink
108	<i>Eryngium</i> sp. L.	Apiaceae	PPN-ap-002	Recaida	Hair tonic, headache, influenza	Leaf	Mature	Fresh	Aqueous infusion	Drink
109	<i>Erythrina edulis</i> Triana ex Micheli	Fabaceae	PPN-fa-003	Guato	High blood pressure, headache, lacerations, disinfectant, healing of wounds	Bark	Mature	Fresh	Aqueous infusion	Drink, topical application
110	<i>Euphorbia laurifolia</i> Juss.	Euphorbiaceae	PPN-eu-002	Pinchú	Cough	Leaf, latex	Mature	Fresh	Aqueous infusion	Drink
111	<i>Euphorbia laurifolia</i> Juss.	Euphorbiaceae	PPN-fa-002	Porotillo	Hair tonic	Bark	Mature	Fresh	Pounded	Bathe
112	<i>Ficus carica</i> L.	Moraceae	PPN-mo-002	Higo	Bronchitis, menstruation pain, sedative	Leaf	Tender and mature	Fresh	Aqueous infusion	Drink
113	<i>Ficus maxima</i> Mill.	Moraceae	PPN-mo-005	Higueron	Internal inflammation	Leaf	Mature	Fresh	Aqueous infusion	Drink
114	<i>Ficus subandina</i> Dugand	Moraceae	PPN-mo-004	Mata palo	Cystitis, strokes, fractured bones	Latex	Mature	Fresh	Pounded	Topical application
115	<i>Foeniculum vulgare</i> Mill.	Apiaceae	PPN-ap-004	Hinojo	Cancer, conjunctivitis, gastritis, nursing, relaxant	Leaf, flower	Mature	Fresh	Aqueous infusion	Drink
116	<i>Fragaria vesca</i> L.	Rosaceae	PPN-ro-003	Uvilla	Tonsillitis, disinfectant, healing of wounds	Leaf, flower	Mature	Fresh	Aqueous infusion	Drink, topical application
117	<i>Fuchsia canescens</i> Benth.	Onagraceae	PPN-on-001	Pena pena	Relaxant, analgesic, high blood pressure	Leaf, flower	Mature	Fresh	Decoction	Drink
118	<i>Fuchsia hybrida</i> Hort. ex Siebert. & Voss	Onagraceae	PPN-on-005	Pena pena	Antiacid, high blood pressure, relaxant, postpartum	Leaf	Mature	Fresh	Aqueous infusion	Drink
119	<i>Fuchsia hypoleuca</i> I. M. Johnst.	Onagraceae	PPN-on-009	Pena pena	Disinfectant, healing of wounds	Leaf, flower	Mature	Fresh	Aqueous infusion	Drink, topical application
120	<i>Fuchsia magellanica</i> Lam.	Onagraceae	PPN-on-004	Pena pena	Disinfectant, healing of wounds, kidney problems, diuretic	Leaf	Mature	Fresh	Aqueous infusion	Drink, topical application
121	<i>Fuchsia</i> sp. L.	Onagraceae	PPN-on-006	Pena pena	Relaxant	Leaf, flower	Mature	Fresh	Aqueous infusion	Drink
122	<i>Gaiadendron punctatum</i> (Ruiz & Pav.) G. Don	Loranthaceae	PPN-lo-001	Violeta de campo	Hair tonic, bronchitis, hepatic pain, influenza, cough	Leaf, flower	Floration	Fresh	Aqueous infusion	Drink
123	<i>Galinsoga caracasana</i> (DC) Sch. Bip.	Asteraceae	PPN-as-003	Pacunga blanca	Yellow fever, hepatic pain	Entire plant	Mature	Fresh	Aqueous infusion	Drink
124	<i>Galinsoga parviflora</i> Cav.	Asteraceae	PPN-as-029	Pacunga amarilla	Fever, internal inflammation, kidney pain	Entire plant	Mature	Fresh	Aqueous infusion	Drink
125	<i>Gallesia integrifolia</i> (Spreng.) Harms	Phytolaccaceae	PPN-ph-001	Palo de ajo	Arthritis, strokes, rheumatism	Bark	Mature	Fresh	Decoction	Drink
126	<i>Gamochaeta americana</i> (Mill.) Wedd	Asteraceae	PPN-as-030	Lechuguilla	Diarrhoea	Leaf, flower	Mature	Fresh	Aqueous infusion	Drink
127	<i>Guarea kunthiana</i> A. Juss.	Meliaceae	PPN-mi-002	Tapirk	Disinfectant, healing of wounds	Leaf	Mature	Fresh	Aqueous infusion	Drink, topical application
128	<i>Guarea</i> sp. Allam. ex L.	Meliaceae	PPN-mi-001	Samik	Hepatic pain	Leaf	Mature	Fresh	Aqueous infusion	Drink
129	<i>Guazuma ulmifolia</i> Lam.	Sterculiaceae	PPN-st-002	Guázimo	Influenza	Fruit	Mature	Fresh	Aqueous infusion	Drink
130	<i>Gynoxys verrucosa</i> Wedd.	Asteraceae	PPN-as-011	Guangalo	Allergy, “espanto”, dermatitis, relaxant	Entire plant	Mature	Fresh	Decoction	Direct application by rubbing
131	<i>Hedyosmum anisodorum</i> Todzia	Chloranthaceae	PPN-ct-001	Guayusa del monte	Stomach pain	Leaf	Mature	Fresh	Aqueous infusion	Drink
132	<i>Heliconia</i> sp.	Heliconiaceae	PPN-he-001	Chiguango	Arthritis, external inflammation	Stem, leaf, flower	Mature	Fresh	Decoction	Bathe

Table 1 (Continued)

No.	Scientific name	Family	Herbarium voucher	Vernacular name(s)	Therapeutical applications	Parts used	Plant development	Plant state	Preparation	Mode of use
133	<i>Hypochaeris sessiliflora</i> Kunth.	Asteraceae	PPN-as-040	Chicoria	Stomach pain, hepatic pain, kidney pains	Leaf	Mature	Fresh	Aqueous infusion	Drink
134	<i>Hyptis pectinata</i> (L.) Poit.	Lamiaceae	PPN-la-013	Pambapoleo	Stomach pain, “espanto”	Leaf	Mature	Fresh	Aqueous infusion	Drink
135	<i>Hyptis sidifolia</i> (L'Hér.) Briq.	Lamiaceae	PPN-la-003	Tipo	Stomach pain, malaria, cough	Leaf	Mature	Fresh	Aqueous infusion	Drink
136	<i>Hyptis</i> sp. Jacq.	Lamiaceae	PPN-la-001	Mastrando	Psicomotor development, diarrhoea, “espanto”	Leaf	Mature	Fresh	Decoction	Drink
137	<i>Ilex guayusa</i> Loes.	Aquifoliaceae	PPN-aq-001	Guayusa	Gastritis, relaxant, increase woman's fertility	Leaf	Mature	Fresh	Aqueous infusion	Drink
138	<i>Impatiens balsamina</i> L.	Asteraceae	PPN-as-041	Chabela	Internal infections	Leaf, flower	Mature	Fresh	Aqueous infusion	Drink
139	<i>Inga acreana</i> Harms	Mimosaceae	PPN-mi-002	Zamique	Rheumatism, malaria	Stem, leaf	Mature	Fresh	Aqueous infusion	Drink
140	<i>Iresine herbstii</i> Hook.	Amaranthaceae	PPN-am-001	Escancel	Fever, relaxant, kidney	Flower	Mature	Fresh	Decoction	Drink
141	<i>Iresine</i> sp. P. Browne	Amaranthaceae	PPN-am-003	Tigrecillo	Headache	Seed	Mature	Dried	Decoction	Drink
142	<i>Iris germanica</i> L.	Iridaceae	PPN-ir-001	Lirio	Conjunctivitis	Flower	Mature	Fresh	Aqueous infusion	Eye washing
143	<i>Jacaranda mimosifolia</i> D. Don	Bignoniaceae	PPN-bg-002	Arabisco	Antiparasite, dermatitis	Entire plant	Mature	Fresh	Decoction	Drink
144	<i>Jatropha curcas</i> L.	Euphorbiaceae	PPN-eu-005	Piñón	Herpes, antiparasite	Leaf, seed	Mature	Fresh	Pounded	Drink
145	<i>Juglans neotropica</i> Diels	Juglandaceae	PPN-ju-001	Nogal	Rheumatism, hepatic pain	Leaf	Mature	Fresh	Decoction	Drink
146	<i>Justicia pectoralis</i> Jacq.	Acanthaceae	PPN-ac-003	Moradilla blanca	Menstruation pain, diuretic, cold, cough	Leaf	Mature	Fresh	Aqueous infusion	Drink
147	<i>Lavatera assurgentiflora</i> Kellogg	Malvaceae	PPN-ma-004	Amapola	Bronchitis, asthma, catarrh, rheumatism	Leaf, seed	Mature	Fresh	Aqueous infusion	Drink, topical application
148	<i>Lavatera</i> sp. L.	Malvaceae	PPN-ma-007	Menta	Diarrhoea, stomach pain	Leaf	Mature	Fresh	Aqueous infusion	Drink
149	<i>Lepechinia mutica</i> (Benth.) Epling	Lamiaceae	PPN-la-005	Casa casa	“Espanto”	Leaf	Mature	Fresh	Decoction	Drink
150	<i>Lepidium chichicara</i> Desv.	Brassicaceae	PPN-br-004	Alpa Chichira	Purgative	Leaf	Mature	Fresh	Aqueous infusion	Drink
151	<i>Lepidium thurberi</i> Wooton	Brassicaceae	PPN-br-001	Chichira	Sedative, postpartum, kidney problems, bladder, internal inflammation	Leaf	Mature	Fresh	Aqueous infusion	Drink
152	<i>Lilium candidum</i> L.	Liliaceae	PPN-li-001	Azucena	Ear infections	Root	Mature	Fresh	Aqueous infusion	Drink, topical application
153	<i>Linum usitatissimum</i> L.	Linaceae	PPN-li-001	Linaza	Kidney problems	Seed	Mature	Fresh	Decoction	Drink
154	<i>Ludwigia peruviana</i> (L.) H. Hara	Onagraceae	PPN-on-003	Mejorana	Hepatic pain, diuretic, kidney problems	Leaf	Mature	Fresh	Aqueous infusion	Drink
155	<i>Lupinus mutabilis</i> Sweet	Fabaceae	PPN-fa-008	Chocho	Fever	Leaf	Mature	Fresh	Aqueous infusion	Drink
156	<i>Lycopersicon hirsutum</i> Dunal	Solanaceae	PPN-so-005	Chichira	“Espanto”, postpartum	Stem	Mature	Fresh	Directly used	Topical application
157	<i>Lycopodiella pendulina</i> (Hook) B. Ollg.	Lycopodiaceae	PPN-lc-001	Cordoncillo	Hangover	Leaf	Mature	Fresh	Aqueous infusion	Drink
158	<i>Macleania rupestris</i> (Kunth.) A.C. Sm.	Ericaceae	PPN-er-005	Joyapa	Tonic	Leaf	Mature	Fresh	Aqueous infusion	Drink
159	<i>Malachra alceifolia</i> Jacq.	Malvaceae	PPN-ma-006	Malva	Stomach pain	Leaf	Mature	Fresh	Aqueous infusion	Drink
160	<i>Mansoa</i> sp. DC.	Bignoniaceae	PPN-bg-001	Ajocaipe	Internal infections, cold, rheumatism, purgative	Leaf	Mature	Fresh	Aqueous infusion	Drink
161	<i>Margyricarpus pinnatus</i> (Lam.) Kuntze	Rosaceae	PPN-ro-004	Nigua	Relaxant, stomach pain, hepatic pain	Flower	Floration	Fresh	Decoction	Drink
162	<i>Marsdenia condurango</i> Rchb. f.	Asclepiadaceae	PPN-al-002	Condurango	Cancer	Bark, leaf	Mature	Fresh and dried	Decoction	Drink

163	<i>Matricaria ricutita</i> L. or <i>Matricaria chamomilla</i> L. or <i>Chamomilla recutita</i> (L.) Rauschert	Asteraceae	PPN-as-016	Manzanilla	Stomach pain	Stem, leaf, flower	Tender and mature	Fresh	Aqueous infusion	Drink
164	<i>Melilotus indica</i> (L.) All.	Fabaceae	PPN-fa-004	Alfalfilla	Disinfectant, external infections	Entire plant	Mature	Fresh	Decoction	Bathe affected part
165	<i>Melissa officinalis</i> L.	Lamiaceae	PPN-la-004	Toronjil	Relaxant, insomnia	Stem, leaf	Tender and mature	Fresh	Aqueous infusion	Drink
166	<i>Mentha spicata</i> L.	Lamiaceae	PPN-la-020	Menta	Stomach pain, relaxant, haemorrhage, earache, influenza	Leaf	Mature	Fresh	Aqueous infusion, decoction, juice	Drink
167	<i>Mentha piperita</i> L.	Lamiaceae	PPN-la-006	Hierbabuena	Stomach pain	Leaf	Tender and mature	Fresh	Aqueous infusion	Drink
168	<i>Mentha pulegium</i> L.	Lamiaceae	PPN-la-015	Menta	Stomach pain	Leaf	Mature	Fresh	Aqueous infusion	Drink
169	<i>Miconia</i> sp. Ruiz & Pav.	Melastomataceae	PPN-me-002	Miconia	Scurvy	Leaf	Mature	Fresh	Aqueous infusion	Drink
170	<i>Mikania</i> sp. Willd.	Asteraceae	PPN-as-009	Chapongo	Antiparasite, hepatic pain, stomach pain	Stem, leaf	Mature	Fresh	Aqueous infusion	Drink
171	<i>Minthostachys mollis</i> (Kunth.) Griseb.	Lamiaceae	PPN-la-009	Poleo del inca	Influenza, malaria, cough	Entire plant	Mature	Fresh	Aqueous infusion	Drink
172	<i>Muehlenbeckia tamnifolia</i> (Kunth.) Meisn.	Polygonaceae	PPN-pl-003	Anguyuyo	Influenza, menstruation pain	Leaf	Mature	Dried	Aqueous infusion	Drink
173	<i>Myrcia</i> sp. DC. ex Guill.	Myrtaceae	PPN-my-004	Arrayán aromático	Tonic	Root, stem, leaf	Mature	Fresh	Aqueous infusion	Drink
174	<i>Myrcianthes rhopaloides</i> (Kunth.) McVaugh	Myrtaceae	PPN-my-005	Arrayán	Tonic, gastritis	Leaf, bark	Mature	Fresh	Aqueous infusion	Drink
175	<i>Myrica pubescens</i> Humb. & Bonpl. ex Willd.	Myricaceae	PPN-mr-001	Laurel	“Espanto”, rheumatism, stomach pain	Stem, leaf	Mature	Fresh	Aqueous infusion and decoction	Drink, bathe
176	<i>Myroxylon balsamum</i> (L.) Harms	Fabaceae	PPN-fa-012	Chaquino	Stomach pain, hepatic pain, dermatitis, disinfectant, healing of wounds, kidney problems, allergy, cancer, gastritis, rheumatism, internal and external infections	Bark	Mature	Fresh	Aqueous infusion	Drink, topical application
177	<i>Nasa loxensis</i> (Kunth.) Weigend	Loasaceae	PPN-ls-002	Ortiga del monte	Internal infections	Root	Mature	Fresh	Decoction	Drink
178	<i>Nasa olmosiana</i> (Gilg ex J.F. Macbr.) Weigend	Loasaceae	PPN-ls-001	Ortiga de león	Infections	Root	Mature	Fresh	Decoction	Drink
179	<i>Nasturtium officinale</i> R. Br.	Brassicaceae	PPN-br-002	Berro	Hepatic pain, pneumonia, blood purification, kidney	Stem, leaf	Tender and mature	Fresh	Aqueous infusion	Drink
180	<i>Neonelsonia acuminata</i> (Benth.) J.M.Coult. & Rose ex Drude	Apiaceae	PPN-ap-007	Zanahoria blanca	Stomach pain	Leaf	Mature	Fresh	Aqueous infusion	Drink
181	<i>Nicotiana tabacum</i> L.	Solanaceae	PPN-so-009	Chamico	Allergy, strokes, rheumatism	Leaf	Mature	Fresh	Pounded	Direct application by rubbing
182	<i>Niphidium crassifolium</i> (L.) Lellinger	Polypodiaceae	PPN-pp-002	Calaguala	Hepatic pain, kidney pain	Root	Mature	Fresh	Aqueous infusion	Drink
183	<i>Ocimum basilicum</i> L.	Lamiaceae	PPN-la-017	Albahaca	Stomach pain, fever, gastritis, influenza, high blood pressure, internal infections, relaxant	Leaf	Mature	Fresh	Decoction	Drink

Table 1 (Continued)

No.	Scientific name	Family	Herbarium voucher	Vernacular name(s)	Therapeutical applications	Parts used	Plant development	Plant state	Preparation	Mode of use
184	<i>Oenothera pubescens</i> Willd. ex Spreng.	Onagraceae	PPN-on-002	Shullo amarillo	Hepatic pain	Entire plant	Mature	Fresh	Aqueous infusion	Drink
185	<i>Oenothera rosea</i> L'Hér. ex Aiton	Onagraceae	PPN-on-011	Shullo amarillo	Hepatic pain, kidney problems	Leaf	Mature	Fresh	Aqueous infusion	Drink
186	<i>Oenothera</i> sp. L.	Onagraceae	PPN-on-010	Shullo blanco	Kidney	Leaf	Mature	Fresh	Decoction	Drink
187	<i>Oreocallis grandiflora</i> (Lam.) R. Br.	Proteaceae	PPN-pe-001	Cucharillo	Headache, hepatic pains, diabetes, fever, kidney problems, cough	Leaf, bark, flower	Mature	Fresh	Aqueous infusion	Drink
188	<i>Oreopanax andreanus</i> Marchal	Araliaceae	PPN-ar-003	Pumamaki	Disinfectant, healing of wounds, dermatitis	Leaf	Mature	Fresh	Decoction	Bathe affected part
189	<i>Oreopanax ecuadorensis</i> Seem	Araliaceae	PPN-ar-001	Pumamaki	Headache	Leaf	Mature	Fresh	Aqueous infusion	Drink
190	<i>Oreopanax</i> sp. Decne. & Planch.	Araliaceae	PPN-ar-002	Pumamaki	Internal and external infections, healing of wounds, dermatitis	Leaf	Mature	Fresh	Aqueous infusion, decoction	Drink and topical application
191	<i>Otholobium mexicanum</i> (L. f.) J.W. Grimes	Fabaceae	PPN-fa-005	Teculen	Stomach pain	Leaf, flower	Mature	Fresh	Aqueous infusion	Drink
192	<i>Otholobium pubescens</i> (Poir.) Grim.	Fabaceae	PPN-ve-003	Culen	Stomach pain, diarrhoea, hepatic pain	Root, leaf, bark	Mature	Fresh	Aqueous infusion	Drink
193	<i>Oxalis corniculata</i> L.	Oxalidaceae	PPN-ox-001	Chulquillo	Diarrhoea	Leaf	Tender	Fresh	Aqueous infusion	Drink
194	<i>Oxalis peduncularis</i> Kunth.	Oxalidaceae	PPN-ox-002	Chulco	Fever, scurvy	Leaf, flower	Mature	Fresh	Aqueous infusion	Drink
195	<i>Passiflora ligularis</i> Juss.	Passifloraceae	PPN-pa-001	Granadilla	External and internal inflammation, hepatic pain, high cholesterol, scurvy, high blood pressure	Leaf, flower	Floration	Fresh	Pounded	Drink and topical application
196	<i>Pelargonium graveolens</i> L'Hér. ex Ait	Geraniaceae	PPN-ge-004	Rosas blancas	Conjunctivitis	Flower	Floration	Fresh	Decoction	Bathe affected part/drink
197	<i>Pelargonium odoratissimum</i> (L.) L'Hér.	Geraniaceae	PPN-ge-001	Malva olorosa	Internal and external inflammation, healing of wounds, stomach pain	Leaf	Mature	Fresh	Aqueous infusion and decoction	Drink, bathe
198	<i>Pelargonium zonale</i> (L.) L'Hér.	Geraniaceae	PPN-ge-006	Malva	Influenza	Flower	Floration	Fresh	Aqueous infusion	Drink
199	<i>Pentacalia</i> sp. Cass.	Asteraceae	PPN-as-012	Bejuco	Hair tonic, influenza	Root, stem, leaf	Mature	Fresh	Aqueous infusion	Drink, topical application
200	<i>Peperomia congona</i> Sodiro	Piperaceae	PPN-pi-003	Congona	Headache, stomach pain, hepatic pain, “espanto”, nervous anxiety, kidney problems, earache	Stem, leaf	Mature	Fresh	Aqueous infusion	Drink
201	<i>Peperomia galioides</i> Kunth.	Piperaceae	PPN-pi-004	Congona blanca	“Espanto”	Leaf	Mature	Fresh	Aqueous infusion	Drink
202	<i>Pernettya prostrata</i> (Cav.) DC.	Ericaceae	PPN-er-004	Motilón	Headache	Leaf	Mature	Fresh	Aqueous infusion	Drink
203	<i>Persea americana</i> Mill.	Lauraceae	PPN-lu-001	Aguacate	Influenza, bronchitis, stomach pain, menstruation pain, diabetes, hair tonic, rheumatism	Leaf, fruit	Mature	Fresh	Aqueous infusion, decoction	Bathe, drink

204	<i>Petroselinum crispum</i> (Mill.) A.W. Hill	Apiaceae	PPN-ap-003	Perejil	Disinfectant, healing of wounds	Entire plant	Mature	Fresh	Decoction and juice	Drink, topical application
205	<i>Phyla</i> sp.	Verbenaceae	PPN-ve-003	Monte dulce	“Espanto”	Leaf	Mature	Fresh	Aqueous infusion	Drink
206	<i>Physalis peruviana</i> L.	Solanaceae	PPN-so-013	Uvilla	Disinfectant, healing of wounds	Flower	Floration	Fresh	Decoction	Bathe
207	<i>Phytolacca americana</i> L.	Phytolaccaceae	PPN-ph-003	Atugsara	Stomach pain, hepatic pain	Leaf, flower	Mature	Fresh	Aqueous infusion	Drink
208	<i>Phytolacca dioica</i> L.	Phytolaccaceae	PPN-ph-002	Humilla	Diarrhoea, high blood pressure	Leaf	Mature	Fresh	Aqueous infusion	Drink
209	<i>Piper aduncum</i> L.	Piperaceae	PPN-pi-006	Matico	Disinfectant, gastritis, influenza, rheumatism, cough	Leaf, flower	Mature	Fresh and dried	Decoction	Topical application
210	<i>Piper barbatum</i> Kunth.	Piperaceae	PPN-pi-005	Cordoncillo	Headache, stomach pain, dermatitis, disinfectant, treatment of wounds	Whole	Mature	Fresh	Infusion and pounded	Drink, topical application
211	<i>Piper bogotense</i> C. DC.	Piperaceae	PPN-pi-001	Sacha guando	Hepatic pain	Leaf	Mature	Fresh	Aqueous infusion	Drink
212	<i>Piper crassinervium</i> Kunth.	Piperaceae	PPN-pi-002	Guabiduca	Diabetes, gastritis, prostate problems	Stem, leaf	Mature	Fresh	Decoction	Drink
213	<i>Piper ecuadorensis</i> Sodiro	Piperaceae	PPN-pi-007	Matico del monte	Hangover, disinfectant, healing of wounds	Leaf	Mature	Fresh	Aqueous infusion	Drink
214	<i>Plantago major</i> L.	Plantaginaceae	PPN-pn-001	Llantén	Hepatic pain, insomnia	Root, stem, leaf, flower	Mature	Fresh	Aqueous infusion	Drink
215	<i>Podocarpus sprucei</i> Parl.	Podocarpaceae	PPN-pd-001	Romerillo	Malaria	Leaf	Mature	Fresh	Aqueous infusion	Drink
216	<i>Polygonum hydropiperoides</i> Michx.	Polygonaceae	PPN-pl-001	Soliman	Fractures, lacerations	Leaf	Mature	Fresh	Directly used	Topical application
217	<i>Portulaca oleracea</i> L.	Portulacaceae	PPN-pr-001	Verdolaga	Internal inflammation, gastritis, internal infections, relaxant, kidney	Leaf	Mature	Fresh	Aqueous infusion	Drink
218	<i>Prestonia mollis</i> Kunth.	Apocynaceae	PPN-ao-001	Bejuco del cáncer	Cancer, disinfectant, healing of wounds	Root, stem, leaf	Mature	Fresh	Aqueous infusion	Drink, topical application
219	<i>Prosopis juliflora</i> (Sw.) DC.	Mimosaceae	PPN-mi-003	Algarrobo	Scurvy, disinfectant, healing of wounds	Leaf, seed	Mature	Fresh	Decoction	Drink, topical application
220	<i>Psidium guajava</i> L.	Myrtaceae	PPN-my-002	Guayaba	Diarrhoea	Leaf	Mature	Fresh	Aqueous infusion	Drink
221	<i>Psidium guineense</i> Sw.	Myrtaceae	PPN-my-001	Guayabilla	Disinfectant, healing of wounds	Leaf	Tender	Fresh	Aqueous infusion	Drink
222	<i>Puya eryngioides</i> André	Bromeliaceae	PPN-bl-001	Achupalla	Relaxant, rheumatism	Leaf	Mature	Fresh	Aqueous infusion	Drink
223	<i>Rosa centifolia</i> L.	Rosaceae	PPN-ro-001	Rosa de castilla	Conjunctivitis, relaxant	Flower	Mature	Fresh	Decoction	Bathe affected part
224	<i>Rosmarinus officinalis</i> L.	Lamiaceae	PPN-la-010	Romero	“Espanto”, headache, stomach pain, anaemia, internal infections	Leaf	Mature	Fresh or dried	Decoction	Bathe/drink
225	<i>Rubus glaucus</i> Benth.	Rosaceae	PPN-ro-007	Mora de castilla	Menstruation pain, disinfectant and healing of wounds	Leaf	Mature	Fresh	Aqueous infusion	Drink, application by rubbing
226	<i>Rubus robustus</i> C. Presl	Rosaceae	PPN-ro-002	Mora silvestre	Lacerations, hepatic pain	Leaf	Mature	Fresh	Decoction	Drink
227	<i>Rubus urticifolius</i> Poir.	Rosaceae	PPN-ro-005	Mora	Lacerations	Leaf, flower	Mature	Fresh	Aqueous infusion	Drink
228	<i>Rumex crispus</i> L.	Polygonaceae	PPN-pl-004	Lengua de vaca	Postpartum, gangrene, external infections	Leaf	Mature	Fresh or dried	Decoction	Bathe/drink
229	<i>Rumex obtusifolius</i> L.	Polygonaceae	PPN-pl-002	Sachagula	Internal inflammations, “espanto”	Leaf	Mature	Fresh or dried	Juice	Drink
230	<i>Ruta graveolens</i> L.	Rutaceae	PPN-rt-001	Ruda	“Espanto”	Stem, leaf, flower	Mature	Fresh	Aqueous infusion	Drink
231	<i>Salvia hirta</i> Kunth.	Lamiaceae	PPN-la-008	Santa María	Antiparasite, “espanto”, kidney pain	Leaf, flower	Mature	Fresh	Aqueous infusion	Drink

Table 1 (Continued)

No.	Scientific name	Family	Herbarium voucher	Vernacular name(s)	Therapeutical applications	Parts used	Plant development	Plant state	Preparation	Mode of use
232	<i>Salvia scutellarioides</i> Kunth.	Lamiaceae	PPN-la-014	Guangalo negro	“Espanto”	Entire plant	Mature	Fresh	Directly used	Direct application
233	<i>Salvia</i> sp. L.	Lamiaceae	PPN-la-012	Monte del susto	Hepatic pain	Stem, leaf	Mature	Fresh	Aqueous infusion	Drink
234	<i>Salvia tiliifolia</i> Vahl	Lamiaceae	PPN-la-007	Santa María	Headache, “espanto”, relaxant	Leaf	Mature	Fresh	Directly used	Direct application
235	<i>Sambucus nigra</i> L.	Caprifoliaceae	PPN-ca-001	Sauco tilo	Influenza, headache, fever, cold, kidney pain, cough	Leaf, flower	Floration	Fresh	Aqueous infusion	Drink
236	<i>Saurauia bullosa</i> Wawra	Actinidiaceae	PPN-ai-001	Chupana	Scurvy	Leaf	Mature	Fresh	Aqueous infusion	Drink
237	<i>Scoparia dulcis</i> L.	Scrophulariaceae	PPN-sc-001	Teatina	Used in preparation of antiophidic serum, dermatitis, disinfectant, healing of wounds, rheumatism	Entire plant	Mature	Fresh	Aqueous infusion	Drink, topical application
238	<i>Schinus molle</i> L.	Anacardiaceae	PPN-aa-001	Molle	Rheumatism, postpartum, cough	Leaf, fruit	Mature	Fresh	Aqueous infusion	Topical application
239	<i>Serjania</i> sp. Mill.	Sapindaceae	PPN-sa-001	Bejuco de la erisipela	“Erisipela” (dermatitis)	Stem, leaf	Mature	Fresh	Aqueous infusion	Drink
240	<i>Sida rhombifolia</i> L.	Malvaceae	PPN-ma-003	Pichana	Gastritis, disinfectant, healing of wounds	Root	Mature	Fresh	Aqueous infusion	Drink
241	<i>Siparuna eggersii</i> Hieron.	Monimiaceae	PPN-mn-001	Monte del oso	Strokes, diabetes, fractured bones, rheumatism, kidney problems	Leaf	Mature	Fresh	Pounded, infusion	Topical application, drink
242	<i>Siparuna muricata</i> (Ruiz & Pav.) A. DC.	Monimiaceae	PPN-mn-002	Limoncillo	Antacid	Stem, leaf	Mature	Fresh	Aqueous infusion	Drink
243	<i>Smallanthus sonchifolius</i> (Poepp.) H. Rob	Asteraceae	PPN-as-038	Jicama	Disinfectant, healing of wounds	Root	Mature	Fresh	Juice	Drink, topical application
244	<i>Solanum albidum</i> Dunal	Solanaceae	PPN-so-006	Hoja de oso	Fractures	Leaf	Mature	Fresh	Directly used	Topical application
245	<i>Solanum americanum</i> Mill.	Solanaceae	PPN-so-007	Mortiño	Internal inflammation, headache, after getting drunk effects, stomach pain, hepatic pain, hematoma, dermatitis, fever, influenza, internal infections, pneumonia, cold, kidney problems	Stem, leaf, flower	Mature	Fresh	Aqueous infusion	Drink
246	<i>Solanum sisymbirifolium</i> Lam.	Solanaceae	PPN-so-004	Uvilla	Stomach pain	Leaf	Mature	Fresh	Aqueous infusion	Drink
247	<i>Solanum</i> sp. L.	Solanaceae	PPN-so-002	Nara	Headache	Leaf	Mature	Fresh	Aqueous infusion	Drink
248	<i>Sonchus oleraceus</i> L.	Asteraceae	PPN-as-037	Cerraja	Internal infections	Leaf	Mature	Fresh	Aqueous infusion	Drink
249	<i>Sorocea trophoides</i> W.C. Burger	Moraceae	PPN-mo-001	Yamila	Insecticide, antimicrobial	Leaf, flower	Mature	Fresh	Pounded or decoction	Topical application
250	<i>Stachytarpheta straminea</i> Moldenke	Verbenaceae	PPN-ve-004	Rabo de ratón	Relaxant, antacid	Stem, leaf	Mature	Fresh	Aqueous infusion	Drink
251	<i>Symphytum officinale</i> L.	Boraginaceae	PPN-bo-002	Consuelda	Disinfectant, fractures, gastritis, relaxant	Leaf	Mature	Fresh	Directly used	Drink, topical application
252	<i>Tagetes erecta</i> L.	Asteraceae	PPN-as-019	Ayarrosa	“Espanto”	Leaf	Mature	Fresh	Aqueous infusion	Drink, direct application
253	<i>Tagetes filifolia</i> Lag.	Asteraceae	PPN-as-008	Sacha anís	Menstruation pain	Stem, leaf	Mature	Fresh	Aqueous infusion	Drink

254	<i>Tagetes terniflora</i> Kunth.	Asteraceae	PPN-as-006	Sacha ruda	Antimycotic, disinfectant, healing of wounds, “espanto”	Root, leaf	Mature	Fresh	Decoction	Bathe affected part
255	<i>Tamarindus indica</i> L.	Caesalpinaceae	PPN-ce-002	Tamarindo	Stomach pain, hepatic pain	Fruit	Mature	Fresh	Aqueous infusion	Drink
256	<i>Tanacetum parthenium</i> (L.) Sch. Bip.	Asteraceae	PPN-as-031	Santa María	“Espanto”, parasites	Leaf	Mature	Fresh	Juice	Drink
257	<i>Taraxacum officinale</i> Weber	Asteraceae	PPN-as-020	Diente de león	Hepatic pain, disinfectant, healing of wounds, “blood purification”, kidney problems	Leaf	Mature	Fresh	Decoction	Drink
258	<i>Tibouchina laxa</i> (Desr.) Cogn.	Melastomataceae	PPN-me-003	Garra del diablo	Cataract	Leaf	Floration	Fresh	Decoction, Juice	Topical application
259	<i>Tradescantia</i> sp. L.	Commelinaceae	PPN-co-002	Calcharón	Fever	Stem	Mature	Fresh	Aqueous infusion	Drink
260	<i>Tradescantia zebrina</i> Hort. ex Bosse	Commelinaceae	PPN-co-004	Calcio	Gastritis, internal infections, relaxant	Leaf, flower	Mature	Fresh	Aqueous infusion	Drink
261	<i>Triumfetta althaeoides</i> Lam.	Tiliaceae	PPN-ti-001	Abrojo, Cadillo	Internal inflammation, stomach pain, hepatic pain, fever, internal infections, kidney problems, cough	Root, leaf, stem, flower	Mature	Fresh	Aqueous infusion	Drink
262	<i>Uncaria tomentosa</i> (Willd. ex Roem.& Schult) DC.	Rubiaceae	PPN-ru-003	Uña de gato	Cancer, internal inflammation, kidney problems	Bark	Mature	Fresh and dried	Decoction	Drink
263	<i>Urena lobata</i> L.	Malvaceae	PPN-ma-005	Cosa cosilla	Hepatic pain	Leaf	Mature	Fresh	Aqueous infusion	Drink
264	<i>Urera caracasana</i> (Jacq.) Griseb.	Urticaceae	PPN-ur-002	Ortiga	Internal inflammation	Root, stem, leaf	Mature	Fresh	Aqueous infusion	Drink
265	<i>Urtica urens</i> L.	Urticaceae	PPN-ur-004	Ortiga	Hangover, circulation problems, kidney problems	Root, leaf	Mature	Fresh	Aqueous infusion	Drink
266	<i>Valeriana microphylla</i> Kunth.	Valerianaceae	PPN-va-001	Valeriana	Sedative, hepatic pain	Root	Mature	Fresh	Aqueous infusion	Drink
267	<i>Verbena litoralis</i> Kunth.	Verbenaceae	PPN-ve-001	Verbena	Hair tonic, parasites, headache, stomach pain, hepatic pain, menstruation pain, strokes, dermatitis, disinfectant, treatment of wounds, high cholesterol, scurvy, “espanto”, influenza, internal infections, partum, “blood purification”, kidney problems	Entire plant with other ingredients	Mature	Fresh and dried	Aqueous infusion	Drink
268	<i>Vernonanthura patens</i> (Kunth.) H. Rob	Asteraceae	PPN-as-032	Aritaco	Used in preparation of antiophidic serum	Leaf	Mature	Fresh	Decoction	Drink
269	<i>Vicia faba</i> L.	Fabaceae	PPN-fa-014	Haba	Headache	Flower	Mature	Fresh	Aqueous infusion	Drink
270	<i>Viola arguta</i> Will. ex Roem. & Schult.	Violaceae	PPN-vi-002	Violeta de campo	Fever, influenza	Flower	Floration	Fresh	Aqueous infusion	Drink
271	<i>Viola odorata</i> L.	Violaceae	PPN-vi-001	Violeta	Bronchitis, stomach pain, fever, influenza, pneumonia, cough	Flower, leaf	Floration	Fresh	Aqueous infusion	Drink
272	<i>Viola tricolor</i> L.	Violaceae	PPN-vi-003	Pensamiento	Relaxant, hearth problems, headache	Leaf	Mature	Fresh	Aqueous infusion	Drink
273	<i>Waltheria ovata</i> Cav.	Sterculiaceae	PPN-st-001	Chicharrón	Internal inflammation	Root	Mature	Fresh	Aqueous infusion	Drink
274	<i>Xanthium spinosum</i> L.	Asteraceae	PPN-as-039	Casha marucha	Diuretic, “blood purification”, relaxant	Leaf	Mature	Fresh	Aqueous infusion	Drink
275	<i>Zea mays</i> L.	Poaceae	PPN-po-004	Maíz	Stomach pain, dermatitis	Flower	Mature	Dried	Decoction	Drink, topical application

still unknown from a phytochemical point of view, as well as others very well known from long ago like, for example, *Cinchona* spp., *Marsdenia condurango*, and *Ilex guayusa*. *Cinchona* spp. is used locally for treating stomach pain, fever, malaria, and mycosis. This use and others are confirmed by literature, mainly for treating malaria and fever (Gurib-Fakim, 2006). According to bibliographic fonts (Kinsley-Scott and Norton, 2003), *Cinchona* spp. has also dermatologic uses, specifically in the treatment of lupus erythematosus. *Marsdenia condurango* is used in the zone against cancer. A Japanese patent confirm this medical use (Mizuno et al., 1981). *Ilex guayusa* is used in case of gastritis, as relaxant and is useful for helping woman fertility. A study describes the use, in Ecuadorian and Peruvian Amazon, of a decoction of guayusa leaves with a high content of caffeine as a morning stimulant (Lewis et al., 1991).

Also the hallucinogenic plant *Banisteriopsis caapi* (ayahuasca) (Naranjo, 1979) is still highly appreciated in the local medicine, in particular for the treatment of headache, as disinfectant, cicatrizing, and in case of rheumatism, liver, and kidney problems.

According to the information collected, the mostly used plants are *Solanum americanum* (Mortino; 4%), *Viola odorata* (Violeta; 3%), *Triumfetta althaeoides* (Abrojo, Cadillo; 2%), *Artemisia sodiroii* (Ajenjo; 2%), and *Cestrum sendtnerianum* (Saucu negro; 2%).

Solanum americanum is used and highly appreciated by local inhabitants for treating a large number of diseases, ranging from inflammation and headache to hangover, stomach pain, hepatic pain, haematoma, dermatitis, fever, influenza, infections, pneumonia, cold, and kidney problems. Outside Ecuador, this plant is used in Guatemala for the cure of dermatophytosis (Cáceres et al., 1991); the leaves and steams are employed in Honduras for curing anaemia, dental aches and infections (Lentz et al., 1998); in traditional medicine of Eastern Cuba it is used in herbal mixtures having a wide-ranging pattern of applications (Hernández and Volpato, 2004), and the activity of leaves extracts for the treatment of protozoal infections was studied in detail (Cáceres et al., 1998).

The flowers and leaves of *Viola odorata* are used by local inhabitants as remedies for bronchitis, stomach pain, fever, influenza, pneumonia, and cough. This plant has worldwide applications, according to different authors: in Italy and Bulgaria, it is used against cough (Leporatti and Ivancheva, 2003); in the Caribbean area, it is used as expectorant (Halberstein, 2005); while in the inland Marches, Italy, it is considered a remedy for skin diseases (Pieroni et al., 2004), and in Israel it is extensively consumed as a natural medicine (Lev, 2006).

Roots, leaves, stem and flowers of *Triumfetta althaeoides* are used, by inhabitants of Loja and Zamora, for curing inflammations, stomach pain, hepatic pain, fever, infections, kidney problems, and cough by local inhabitants. The Tacana, an Amazonian Bolivian ethnic group, uses the roots of this plant for kidney pain (Bourdy et al., 2000).

Leaves of *Artemisia sodiroii* are employed in the zone under study as a remedy against inflammations, stomach pain, hepatic pain, fever, infections, kidney problems, and cough. No results, either of ethnopharmacological uses or phytochemical studies,

have been found in the literature for *Artemisia sodiroii*. Essential oils and extracts from leaves of genus *Artemisia* have been studied in detail from a pharmacological point of view, and the results have been reported in many papers (Hatimi et al., 2001; Kordali et al., 2006; Lee et al., 2003). Artemisinin, a sesquiterpene lactone isolated from *Artemisia annua* L., is an effective drug against malaria (Bar-Zeev and White, 2006) and is under early research and testing for treatment of cancer (White et al., 2006).

From leaves and flowers of *Cestrum sendtnerianum* are prepared aqueous infusions that are utilized as purgative, in case of headache, stomach pain, fever, gangrene, influenza, infections, rheumatism, and cough. Bibliographical information about ethnobotanical use of this species is not reported in literature; nevertheless, a phytochemical study of this plant revealed the presence of steroidal saponins, and one of these compounds showed a weak cytotoxic activity on HL-60 human promyelocytic leukaemia cells (Haraguchi et al., 2000).

The plant families mostly used by inhabitants are Asteraceae (33), Lamiaceae (16), Solanaceae (13), Fabaceae (12), Onagraceae (9) and Apiaceae (9). Table 2 shows their pharmacological uses.

Plants of the family Asteraceae are habitually used as disinfectant (4) and wound healing (4), and for curing stomach pain (8), “espanto” (6), hepatic pain (6), kidney problems (5), infections (4), influenza (4), and different fevers like malaria or yellow fevers (4). As a comparison, some Mexican Asteraceae are mainly used as an internal remedy for flatulence and stomach aches, to cleanse wounds, as analgesic, anti-inflammatory, anti-diarrhoea, against fevers, for treating kidney ailments and skin eruptions (Heinrich et al., 1998).

Lamiaceae plants are often used locally against stomach pain (7), “espanto” (7), as relaxant (4), in case of cough (3), headache (3), malaria (3), and influenza (3). The use of plants of this family in infusions, as digestives or teas, is frequently reported in the literature, confirming the local use for treating stomach pain and as relaxant (Pardo de Santayana et al., 2005).

Several plants of Asteraceae and Lamiaceae families are used for treating “espanto”, a typical ill-defined Andean pathology, in which psychosomatic problems, originating from phobic factors, produce profound biological and psychological weakness (De Feo, 2003).

Plants of the family Solanaceae are generally employed in treatment of stomach pain (5), headache (4), influenza (4), rheumatism (4), fever (3), and infections (3). A study performed in the Bolivian Chaco, reports the use of some species of the family Solanaceae for treating headache, fever, dermatophytosis and diarrhoea (Bourdy et al., 2004), these pharmacological uses are correlated to our findings. In addition, Solanaceae plants are extensively known and used for their hallucinogenic properties (Carlini, 2003).

The plants of the family Fabaceae reported in this study are mostly used in case of stomach pain (5), hepatic pain (3), and as disinfectant (3) and wound healing (4). Some plants of Fabaceae family are used in south Brazil as anti-inflammatory, antimicrobial, for washing wounds, and for treatment of urinary tract infections (Coelho de Souza et al., 2004).

Table 2

Therapeutical applications of the major plant families used in the traditional medicine of peoples of Loja and Zamora (Ecuador)

Traditional use	Asteraceae	Apiaceae	Fabaceae	Lamiaceae	Onagraceae	Solanaceae
After getting drunk effects	0	0	0	0	0	1
Allergy	2	0	1	0	0	1
Anaemia	0	0	0	1	0	0
Analgesic	1	0	0	0	1	0
Antiacid	0	1	0	0	1	0
Antimycotic	2	0	0	0	0	1
Antiphidic	2	0	0	0	0	0
Antiparasite	2	0	0	1	0	1
Arthritis	0	1	0	0	0	0
Astringent	1	0	0	0	0	0
Blood purification	2	0	0	0	0	1
Bone fractures	0	0	0	0	0	2
Bronchitis	0	0	1	0	0	0
Cancer	0	1	2	0	0	0
Cold	1	0	0	0	0	2
Conjunctivitis	0	1	0	0	0	0
Cough	2	0	1	3	0	2
Dermatitis	3	0	1	0	0	1
Diabetes	1	0	0	0	0	0
Diarrhoea	1	1	1	1	0	0
Disinfectant	4	1	3	0	2	2
Diuretic	2	0	0	0	2	0
Earache	0	0	0	1	0	0
Espanto	6	0	0	7	0	1
Fever	2	0	1	1	0	3
Fractures	1	0	0	0	0	0
Gangrene	1	1	0	0	0	1
Gastritis	0	1	1	1	0	1
Haemorrhage	0	0	0	1	0	0
Hair tonic	2	1	0	0	0	0
Headache	1	1	2	3	0	4
Healing	4	1	4	0	2	1
Hematoma	0	0	0	0	0	1
Hepatic pain	2	0	0	0	0	0
Hepatic pain	6	2	3	1	3	1
High blood pressure	0	0	1	1	2	1
High cholesterol	0	0	0	0	0	1
Infections	4	1	2	2	0	3
Inflammation	3	0	1	1	0	1
Influenza	4	1	0	3	0	4
Insomnia	0	0	0	1	0	0
Kidney problems	5	1	2	1	4	2
Lacerations	0	0	1	0	0	0
Lose weight	1	0	0	0	0	0
Malaria	1	0	0	3	0	0
Menstruation pain	3	1	1	0	0	0
Nursing	0	1	0	0	0	0
Pneumonia	1	0	0	0	0	1
Pospartum bathe	1	0	0	0	1	1
Prostate	1	0	0	0	0	0
Psicomotor development	0	0	1	1	0	1
Relaxant	2	2	0	4	3	1
Rheumatism	3	0	1	0	0	4
Scurvy	1	0	0	0	0	0
Stomach pain	8	5	5	7	0	5
Stroke	0	0	0	0	0	1
Sunstroke	1	0	0	0	0	0
Tonsillitis	0	0	0	0	0	1
Tooth decay	2	0	0	0	0	1
Yellow fever	1	0	0	0	0	0

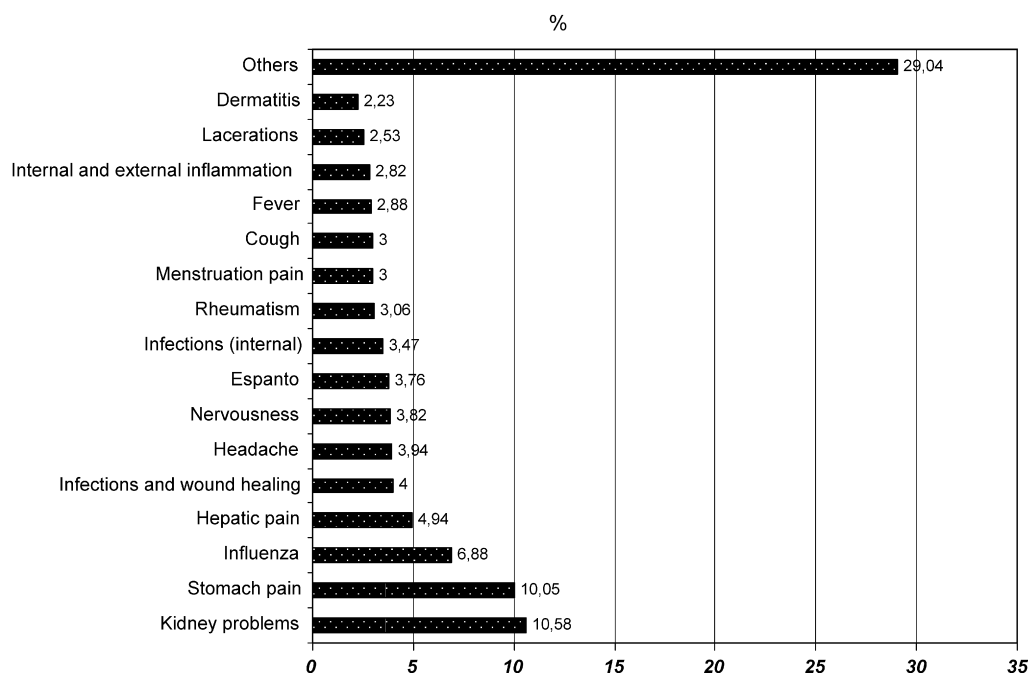


Fig. 2. Therapeutical uses of the plants reported in this paper.

Plants of family Onagraceae are usually utilized in case of kidney problems (4), hepatic pains (3), and as relaxant (3). In one study carried out in Peru, an Onagracea plant, *Oenothera multicaulis* R. & P., used as antiseptic and for washing wounds, showed an interesting antifungal and antibacterial activity (Rojas et al., 2003).

The plants of the family Apiaceae used in the region under study are mainly employed for treating stomach pain (5). Infusions of some species of Apiaceae are often used as digestive teas in Spain (Pardo de Santayana et al., 2005).

In total, 68 different therapeutical uses have been recorded for the cited plants, including the treatment of kidney problems (11%), stomach ache (10%), influenza (7%), hepatic pain (5%); disinfectant and wound healing properties (4%) have also been indicated (Fig. 2).

An aqueous infusion is the more general way of administration; topical applications and decoctions are also common. Leaves (32%) are the vegetal parts most frequently selected, followed by a combination of stems and leaves (14%), and flowers (12%).

Almost half of the plants (49.5%) are used in maturity, followed by in floration (19%) and in tender states (14%).

4. Conclusions

The use of herbs for illness treatments is still needed by populations that, because of the high costs, have a difficult access to western medicines and, therefore, usually resort to their own traditional remedies. On the other hand, integrated forms of modern and traditional medicines are often practiced by several doctors nowadays. Loja and Zamora-Chinchipe are two south-

ern Ecuadorian provinces with an abundant biodiversity and a rich ethnobotanical tradition; this favourable combination gave rise to a largely practiced folk medicine comprising more than 200 local plants, which have been identified botanically. The diseases cured with plants are, of course, strictly related to the health situation of the local communities. Kidney and stomach infections, headache and influenza are the most common ailments for which natural remedies are used. Nevertheless, other less widespread diseases like cancer, diabetes or other diseases are also cured with different plant extracts.

In these days, conservation of the traditional knowledge is greatly menaced by a lot of external factors related to the “modernization” of the region. It is, therefore, urgent to save the cultural heritage of the natives, by confirming the therapeutical uses of the plants with scientific criteria and fostering the phytochemical research on species containing potentially active principles.

In this context, more detailed studies about the use of medicinal plants by the Saraguro and Shuar communities are currently being carried out by our research group, and the biological activity of the most promising plants reported in this study is being evaluated.

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