

INDOOR PLANTS CULTIVATED IN BOTANICAL GARDEN IASSY USED IN TRADITIONAL MEDICINE

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Abstract: The botanical gardens are institutions that initially have had at their basis collections of medicinal plants. The Botanical Garden from Iași has a collection of exotic plants used in the traditional medicine with a number of 118 taxa belonging to a number of 56 botanical families. Plant parts used are different, most often leaves are involved. The symptoms for which are used are quite various and different in the areas where the plants are cultivated as compared to the plants from their original areas. These plants represent a valuable didactic material for the researchers in the area, for the botanists, students in biology and pharmacy. A number of taxa present a special conservative value and are protected by a series of official documents of national or international importance.

Keywords: greenhouses plants, traditional medicine, Botanical Garden Iassy

Introduction

The botanical gardens are cultivating diverse plant collections, but from a historical point of view the collections of medicinal plants represent the cradle of all similar institutions. There was permanently a connection between the study of the plants from the botanical gardens and the research activity from the medical and the pharmaceutical area (Beffa and Cravotto, 2001). The founder of the Botanical Garden from Iassy, Anastasie Fătu, was a doctor and a naturalist and had understood in that period (1856) the importance of such a specific space destined for the studious young people.

The plants with medicinal use are representing a very valuable and accessible material base for the specialists and the students from the pharmaceutical domain. Each plant from this category represents a strategic reserve which can prove to be useful in any moment; thus its improvement with diverse species, well-informed and accurately identified, is a permanent preoccupation. For the wide public the gardens must adopt an adequate presentation of this collection, promoting the knowledge and the interest for the medicinal plants aiming for a better understanding of the relations man-nature. Thus the botanical garden can become a local leader in the discovery, explanation and dissemination of all information about the diverse and dynamic relations between the population and the plants all over the world. The effective use of this collection for the preservation depends by the implementation of a series of professional standards involving continuous activities for documentation and genetic management.

Materials and methods

The material is represented by the plant collections from the Greenhouse Complex of the Botanical Garden „Anastasie Fătu” from Iassy. These collections comprise in total approximately 2,000 taxa, originating from the Mediterranean, tropical and Equatorial areas

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from the world. According to the information of the specific literature there were identified 118 taxa used in the traditional medicine. The botanical classification is due to the current works in the field and the medicinal use of the plants is drawn from the classical and the most recent works (Schmelzer and Gurib-Fakim, 2008; Hong, L. et al., 2015; Jhuma D., Dash G. K., 2013; Tilford, 1997; Wiart, 2006).

Some of the identified species have a high preservative value, being mentioned on the International Red List (SANBI, The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES 1973, 1979) or any other documents on national interest concerning the protection of the biodiversity (Walter and Gillet, (eds.). 1998). The zoological mentioned categories are according to the documents published by IUCN (International Union for Conservation of Nature, 2003).

Results and discussions

The plants were used for treatments since the Middle Paleolithic, approximately 60,000 years ago, but real data regarding the traditional medicine (ethno-medicine) can be discovered in the documents reminding about their usage. The medicinal plants were traded for centuries and this sector is developing very fast, growing with 12-15% per year in the very developed countries. During the colonization of the Africa, the traditional medicine was intentionally suppressed or restricted in almost all countries of the black continent (Owuor et al., 2006), the western medicine being a part of the civilized colonial mission. The same happened in India with the ayurvedic medicine.

The demand for medicinal plants is continuously growing in the industrial and developed countries due to an increase of their population and to an incessant awareness for the benefits of the natural products as an effective, economic and sure alternative to the industrial synthesized medicines with high costs. It is considered that the tropics are a unique source of chemicals with potential in obtaining modern medicines and the future investigation upon the species of the tropical forest can provide solutions for different diseases for which there are not yet discovered satisfying treatments.

In general the plants with medicinal usage are exposed in the botanical gardens outdoors, amidst the group of useful plants, situation encountered also in the Botanical Garden from Iași. Most often are emphasized the species recognized as valuable after comprehensive pharmacological investigations (Tănăsescu and Teodorescu, 2006), but here are also numerous other plants used in the traditional medicine from different areas of the world, which are potentially new sources of drugs (Fabricant and Farnsworth, 2001).

In the article there are highlighted certain issues related to the ethnomedicinal uses of plants in countries with poor economic development or in areas where specific diseases are present, such as malaria, typhoid fever, elephantiasis etc.

In the entire world there are about 2,000 ethnic groups and almost each group has specific knowledge of traditional medicine, orally transmitted from one generation to another. Most of this information was the starting point in the obtaining of pharmacological agents (Rai et al., 2011).

In Table 1, the taxa are listed in the alphabetical order of the families to which they belong alongside information about: the parts of plants used, the specific diseases or with high incidence, the areas where these treatments are practiced (Bussmann and Sharon, 2006; Cambie and Ash, 1994; Gupta et al., 2013; Jorim, 2012; Lev and Amar,

2008; Rahman and Khanom, 2013; Takawira-Nyanya and Stedje, 2011; Vandebroek et al., 2010).

The taxa cultivated in the greenhouses of the Botanical Garden from Iași with applications in the traditional medicine are originating from different regions of the world and belong to a number of 56 botanical families. Most of the species are angiosperms (93 %), and only 4 taxa are belonging to the group of pteridophytes (*Adiantum capillus-veneris* L., *Asplenium nidus* L., *Cyrtomium falcatum* (L. fil.) C. Presl, *Pteris cretica* L.), and 4 taxa are gymnosperms (*Cycas circinalis* L., *Cycas revoluta* Thunb., *Stangeria eriopus* (Kunze) Baill., *Cupressus sempervirens* L.). Among the angiosperm the family with the most numerous representatives is Asparagaceae - 11 taxa, followed, in decreased order by Araceae and Moraceae with 4 taxa. According to the provenance area most of species are originated from Asia (about 40 %), from Africa, respectively Central and South America are coming about 25%. A reduced number of species have a Mediterranean dissemination (10), and 6 of them are distributed in the Eastern area of Asia up to Australia. *Drosera rotundifolia* L. are widely spread circumboreal species.

The plant parts used as remedies are the roots, the rhizomes, the bulbs, the bark, the stem and/or the leaves sap, fruits or even the whole plant (*Adiantum capillus-veneris*, *Drosera rotundifolia*, *Houttuynia cordata*, *Kalanchoe laciniata*, *Pilea microphylla*, *Xanthosoma violaceum*). Much rarely are used the inflorescences or the solitary flowers (ex. *Ananas comosus*, *Cordyline terminalis*, *Ficus religiosa*, *Gardenia jasminoides*, *Phoenix dactylifera*) or the ovules (*Cycas revoluta*). The plants are used fresh or dry, single or together with parts from other plants. It is well known by the ecologist the fact that the medicinal plants collected for their roots or bark are the most endangered due to their over-exploitation.

The symptoms treated by using plants are numerous, from simple colds, coughs, headaches or toothaches, inflammations to some more severe illnesses such as cancer, diabetes, dysentery, tuberculosis. There are numerous remedies specific to the areas with critical economic development: plants used against the snake bites (*Clivia miniata*, *Gloriosa superba*, *Ficus religiosa*, *Mimosa pudica*), elephantiasis (*Asplenium nidus*, *Plectranthus scutellarioides*), leprosis (*Ficus benjamina*, *Hibiscus rosa-sinensis*), malaria (*Citrus limon*, *Euphorbia umbellata*) replacement for the mouthwash (*Barleria prionitis*), pre/postpartum impairment (*Agapanthus africanus*, *Bowiea volubilis*, *Citrus sinensis*, *Clivia miniata*, *Oryza sativa*).

Most of the species have numerous applications, sometimes extremely diverse. The lemon (*Citrus limon*) is a relevant example: the leaves, bark and its fruits are used for the treatment of the troubles of the following apparatus: respiratory, digestive and cardiovascular. It is interesting to observe the completely different way of employment of the same plant in different areas, in the original area as opposed to the area in which it is cultivated. Thus from the plant *Mangifera indica* from Bangladesh the people are using the seeds in the treatment for the diabetes; in Zimbabwe the bark is used for cases of diarrhea and dysentery; in Tanzania against the toothaches and in Brazil the leaves are used for several respiratory troubles. The proceedings in the usage of the plants are diverse, from the preparation to the infusion, decoct, cataplasms and to chewing the fragments for a therapeutic effect or inhaling the smoke emanated from the burned leaves of *Asplenium nidus* or the vapors generated after the burning of some plant parts.

In Romania (Butură, 1979), from more than 100 registered species, there were cultivated along time quite a few (approximately 15), most of them with Mediterranean origin (Roche, 1924). Some plants are recognized as ornamental species (*Aloe arborescens*, *Citrus limon*, *Myrtus communis*, *Nerium oleander*, *Pelargonium odoratissimum*, *P. radula*, *P. zonale*, *Ruscus aculeatus*), other as condiments (*Laurus nobilis*, *Piper nigrum*, *Rosmarinus officinalis*) or food plants (*Ceratonia siliqua*, *Olea europaea*, *Punica granatum*).

There is a real rebirth current for the reintroduction of the practices and the materials used in a traditional way with ecological and economical consequences. There is a real pressure on the ethno-botanists as for the salvation of the traditional knowledge, but also for the education of the younger generations about the plants importance and their cultivation with reference to the urbanization degree. The actual demand for medicinal plants has a growing tendency with real consequences upon the environment, especially if the savage material is not supplied with cultivated matter. In economically disadvantaged areas the trade with medicinal plants is the only source of income, and one of the most eloquent examples is South Africa. The statistics are showing that for the trade purpose there are collected over 700 species. After an attentive monitoring activity of the species *Clivia miniata* (Lindl.) Bosse, *Haworthia limifolia* Marloth and *Bowiea volubilis* Harv. it was determined a decrease of the populations with almost 40%, among the main causes being the collection for medicinal purposes, the decline period being 100 years, respectively 60 and 30 years (Dold and Cocks, 2002). All the three taxa are mentioned on the Red List of South East Africa in the category vulnerable (VU), and *Aloë ferox* Mill., *Crassula multicava* Lem. subsp. *multicava*, *Haemanthus albiflos* Jacq., *Kigelia africana* (Lam.) Benth. and *Myrsine africana* L. in the category least concern (LC).

Some of the collected species are very important as they are mentioned in the official documents concerning the preservations of the biodiversity. On the Red List IUCN we can discover *Cycas circinalis* L. - endangered (EN), *Cycas revoluta* Thunb. - least concern (LC) and *Stangeria eriopus* (Kunze) Baill. - vulnerable (VU). *Aloe ferox*, *Bowiea volubilis*, *Carnegiea gigantea*, *Euphorbia tirucallii* and *Pereskia aculeata* are present in the CITES annexes. The species registered in one of the zoological mentioned categories have a decrease in population due to an abusive collection from the nature for the purpose of their exploitation and/or because of the destruction of their natural habitats.

The plants of the collection are constantly observed; there are studied the peculiarities of their growth and the development and reproduction during the period of their vegetation. As for the capacity of propagation, there is the specie self-spreader (*Adiantum capillus-veneris*, *Bryophyllum pinnatum*, *Pilea microphylla*, *Pistia stratiotes*, *Ruellia squarrosa*, *Tillandsia usneoides*), most of the plants are successfully propagated by means of seeds or on the vegetative way, but some taxa are requiring special care. The representatives of the families Cycadaceae, Zamiaceae and Arecaceae are quite difficult to be multiplied, either due to their biological particularities, or due to the fact that they do not form seeds or the seeds do not germinate.

There are numerous international projects following the sustainable exploitation of the medicinal plants and of their traditional knowledge and all these missions are mentioning the important role of the botanical gardens (Hawkins, 2008). These institutions represent the ideal place for the knowledge dissemination towards the public (Wyse and Sutherland, 2000), being the place where can be completed studies concerning the

germination and the adequate agro-cultural conditions for a widespread cultivation, as well as for other activities that can lead finally to a pressure decrease from the savage plant populations. A relevant example are the courses initiated by the RBGE (Royal Botanical Garden Edinburgh) in respect of enrich awareness of the natural world, nurture the creative use of healing botanicals and exploration of the 'remembered remedies'.

The international exchanges of botanic material made annually with approximately 500 similar institutions, the Botanical Garden from Iași is aiming to obtain new taxa which can enrich the existing collections. All these activities are registered in the conservation effort "ex situ", of the biodiversity in general.

Conclusions

The Botanical Garden from Iași is housing in its greenhouses 118 species of plants used in the traditional medicine, from very divergent areas of the world. Some of these plants are threatened due to the massive collection, therefore are protected by national or international regulations. Within the conservation programs "ex situ" there are continuously monitoring the evolution of these taxa in protected conditions, there are performed different studies upon the germination and also as regards to the agro-techniques aiming to a widespread cultivation.

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Table 1. Species cultivated in Botanical Garden Iassy and their uses in traditional medicine

No.	Family	Species	Part used	Treated diseases	Areas where treatment are practised
1.	Aspleniaceae	<i>Asplenium nidus</i> L.	rhizoms, leaves	coughs, elephantiasis, fever	
2.	Dryopteridaceae	<i>Cyrtomium falcatum</i> (L. f.) C. Presl	rhizoms	anthelmintic	India
3.	Pteridaceae	<i>Adiantum capillus-veneris</i> L.	whole plant, fronds, spores	antibacterial, antifungal, antiviral, diabetes, fever, gynaecological diseases, hypoglycaemic, wounds	Italy, India, Hawaii, Bangladesh
4.	Pteridaceae	<i>Pteris cretica</i> L.	fronds	antibacterial, wounds	India
5.	Cycadaceae	<i>Cycas revoluta</i> Thunb.	leaves, ovules, seeds	gastropathy, kidney pain	Indonesia
6.		<i>Cycas circinalis</i> L.	bark, seeds, leaves	gastropathy, wounds	Asia
7.	Zamiaceae	<i>Stangeria eriopus</i> (Kunze) Baill.	subterraneous stem	arthritis, gastropathy, headache, promoting circulation of blood	Africa
8.	Cupressaceae	<i>Cupressus sempervirens</i> L.	acicular leaves, cones	anthelmintic, antiinflamator, breathing difficulties, cough, diuretic, flu, hemorrhoids, pertussis, promoting circulation of blood, rheumatism, wounds	Lybia, Tunisia, Turkey, Azerbadjan
9.	Acanthaceae	<i>Barleria prionitis</i> L.	whole plant, roots	breathing difficulties, fever, mouthwash, toothaches	India
10.		<i>Fittonia albivenis</i> (Lindl. ex Veitch) Brumitt	whole plant	headache	Amazon
11.		<i>Ruellia squarrosa</i> (Fenzl) Schaffnit	leaves	analgesic, antioxidant, cancer, fever	America
12.	Amarillydaceae	<i>Agapanthus africanus</i> (L.) Hoffmanns.	root, leaves	birth pain, infertility, promoting circulation of blood	South Africa
13.		<i>Clivia miniata</i> (Lindl.) Bosse	whole plant	fever, induce labour in childbirth, snake bites	South Africa
14.		<i>Haemanthus albiflos</i> Jacq.	bulbs, leaves	cough, turbeculosis	Western Cape
15.		<i>Tulbaghia violacea</i> Harv.	bulbs, leaves	anthelmintic, arthritis, asthma, cough, fever, gastropathy, headache, rheumatism, tuberculosis	Africa
16.	Anacardiaceae	<i>Mangifera indica</i> L.	bark, fruit, seeds	anthelmintic, antiseptic, asthma, bleeding, breathing difficulties, cough, diabetes, diarrhea, diuretic, dysentery, gynaecological diseases, hemorrhoids, rheumatism	Brazil, Bangladesh, Zimbabwe

17.	Apocynaceae	Cascabela thevetia (L.) Lippold	bark, leaves, seeds	abortiv, fever, gastropathy, gynaecological diseases, rheumatism, skin diseases, snake bites	India	
18.		Nerium oleander L.	whole plant, leaves	abortiv, anthelmintic, antibacterial, antifungal, asthma, diabetes, diuretic, epilepsy, leprosy, rheumatism, scabies, toothache, ulcer	China, Maroc, Romania	
19.	Araceae	Colocasia esculenta (L.) Schott	corm, tubers, leaves	analgesic, asthma, artrita, bleeding, diarrhea, laxative, rheumatism, skin diseases	Bangladesh, Hawaii	
20.		Monstera deliciosa Liebm.	roots, leaves	arthritis, snake bites	America	
21.		Pistia stratiotes L.	leaves	bleeding, diuretic, thrombosis, kidney diseases	Asia	
22.		Syngonium podophyllum Schott	roots, bark, leaves	antibacterian, ant bite, antiinflamator, skin diseases	Belize Ecuador	
23.		Xanthosoma violaceum Schott	whole plant, leaves	diabetes	Hawaii, Latin America	
24.		Zantedeschia aethiopica (L.) Spreng.	rhizome, leaves	abscess, asthma, rheumatism, skin wounds, podagra	Cap	
25.		Arecaceae	Phoenix dactylifera L.	leaves, flowers, polen fruits, seeds	asthma bleeding, fever, gynaecological diseases, tuberculosis, gastropathy, toothaches	Saudy Arabia Afganistan
26.			Trachicarpus fortunei (Hook.) H. Wendl.	leaves, fruits	epilepsy	Asia
27.	Asparagaceae	Agave americana L.	root, leaves	diarrhea, diuretic, dysentery, gastropathy, gynaecological diseases, snake bites, toothaches, wounds	North America	
28.		Bowiea volubilis Harv.	bulbs	abortiv, gynaecological diseases, headache, induce labour in childbirth, mycosis, skin diseases		
29.		Clorophytum comosum (Thunb.) Jacques	roots	bronchitis, burns	Africa	
30.		Cordyline fruticosa (L.) A. Chev.	root, leaves, flowers	ear ache, hemostatic, gynaecological diseases, toothaches	Papua, New Guinea	
31.		Dracaena draco (L.)	stem	antiviral, haemorrhages, ulcers	Europa	
32.		Ophiopogon japonicus (L.f.) Ker Gawl.	roots	mycosis, cough, gastropathy, turberculosis	China	
33.		Ruscus aculeatus L.	roots, leaves, buds	diuretic, hemorrhoids, icter, podagra, varicose	Italy	
34.		Sansevieria hyacinthoides (L.) Druce	rhizoms, leaves	anthelmintic, diarrhea, ear ache, gastropathy, hemorrhoids, toothaches	Africa	
35.		Sansevieria kirkii Baker	rhizoms	purgativ, snake bites, wounds	Africa	

36.		<i>Sansevieria parva</i> N. E. Br.	leaves	snake bites	Africa
37.	Berberidaceae	<i>Nandina domestica</i> Thunb.	root, stem, fruits	asthma, conjunctivitis, cough, diarrhea, fever, icter, pertussis	India
38.	Bignoniaceae	<i>Kigelia africana</i> (Lam.) Benth.	roots, stem, leaves, fruits	antibacterian, cancer, dysentery, gynaecological diseases, leprosy, mycosis, skin diseases	Africa
39.	Bromeliaceae	<i>Ananas comosus</i> (L.) Merr.	fruits, flowers	anthelmintic, blood purifier, diarrhea, fever	Brazil, Hawaii, Nepal
40.		<i>Tillandsia usneoides</i> (L.) L.	whole plant	gastropathy, diabetes, hemorrhoids, rheumatism	Brazil
41.	Cactaceae	<i>Carnegiea gigantea</i> (Engelm.) Britt. et Rose	stem	rheumatism	
42.		<i>Pereskia aculeata</i> Mill.	leaves	tumors	South America
43.	Casuarinaceae	<i>Casuarina equisetifolia</i> L.	root, bark	antibacterian, anthelmintic, asthma, beriberi, diarrhea, dysentery, fever, ulcer	India
44.	Colchicaceae	<i>Gloriosa superba</i> L.	roots, tubers, leaves, seeds	abortiv, anthelmintic, arthritis, asthma, childbirth pain, cholera, gastropathy, gynaecological diseases, kidney pain, podagra, skin diseases, snake bites, typhus	India
45.	Commelinaceae	<i>Rhoeo spathacea</i> (Sw.) Stearn	leaves, flowers	antiinflammator, cancer, dysentery, gastropathy, gynaecological diseases, mycoses, pertussis	Malaysia
46.	Crassulaceae	<i>Crassula arborescens</i> Willd.	leaves	corns, diarrhea, epilepsy, purgative	
47.		<i>Crassula multicava</i> Lem.	leaves	emetic	
48.		<i>Crassula ovata</i> (Mill.) Druce	leaves	anthelmintic, diarrhea, epilepsy, gastropathy, skin diseases	South Africa
49.		<i>Kalanchoe laciniata</i> (L.) DC.	whole plant, leave	cough, diabetes, diarrhea, dysentery, gastropathy, tuberculosis, wounds	India, Filipine, Laos, Indochina, Vietnam
50.	Cyperaceae	<i>Cyperus papyrus</i> L.	stem	cancer, eyes diseases, wounds	Africa
51.	Droseraceae	<i>Drosera rotundifolia</i> L.	whole plant, leaves	antibacterial, antibiotic, hypoglycaemic, pertussis, respiratory diseases, skin diseases	Romania
52.	Ericaceae	<i>Arbutus unedo</i> L.	bark, leaves	antiseptic, diuretic, depurative	Tunisia
53.	Euphorbiaceae	<i>Euphorbia milii</i> Des Moul.	stem	gastropathy, skin diseases	Africa
54.		<i>Euphorbia tirucalli</i> L.	root, stem, leaves	antibacterian, asthma, gynaecological diseases, hemorrhoids, rheumatism, skin diseases, wounds	Afganistan, Etiopia India, Uganda

55.		<i>Euphorbia umbellata</i> (Pax) Bruyns	roots, stem, leaves	anthelmintic, gynaecological diseases, malaria, skin diseases	
56.	Leguminosae	<i>Ceratonia siliqua</i> L.	seeds	asthma, cough, diarrhea, purgativ	Lybia, Romania
57.		<i>Mimosa pudica</i> L.	whole plant, root	bleeding, diabetes, dysentery, hemorrhoids, gynaecological diseases, leprosis, skin diseases, snake bites, wounds	Bangladesh, India
58.	Geraniaceae	<i>Pelargonium odoratissimum</i> (L.) L'Hér.	leaves	antibacterian, antiseptic, bleeding, gastropathy, skin diseases, wounds, zona zoster	Romania
59.		<i>Pelargonium radula</i> (Cav.) L'Hér.	leaves	antibacterian, gastropathy	Romania
60.		<i>Pelargonium zonale</i> (L.) L'Hér. ex Aiton (hybrids)	leaves	diarrhea, gastropathy toothaches, wounds	Romania
61.	Lamiaceae	<i>Plectranthus prostratus</i> Gürke	leaves	gynaecological diseases	Africa
62.		<i>Plectranthus scutellarioides</i> (L.) R. Br. (hybrids)	leaves	anthelmintic, cough, dysentery, elephantiasis, gastropathy, induce labour in childbirth, wounds	Indonezia, Mexic Papua, New Guinea
63.		<i>Pogostemon cablin</i> (Blanco) Benth.	leaves	antiseptic, cicatrizant, diuretic, fever, gastropathy, insects bites, skin diseases	Asia
64.		<i>Rosmarinus officinalis</i> L.	stem, leaves, flowers	antiseptic, asthma, cicatrizant, diarrhea, diuretic, fever, gastropathy kidney pain, rheumatism	Brazil, Romania
65.	Lauraceae	<i>Cinnamomum camphora</i> (L.) J. Presl	stem, leaves, fruits, seeds	chilblains, gastropathy, rheumatism, skin diseases, toothaches	Nepal
66.		<i>Laurus nobilis</i> L.	leaves, fruits	anthelmintic, gastropathy, gynaecological diseases, hemorrhoids, mycosis, rheumatism, skin diseases, wounds	Italy, Romania
67.		<i>Persea americana</i> Mill.	leaves, fruits	anthelmintic, cough, diarrhea, dysentery, diuretic, gastropathy, mycosis, toothaches	Brazil, Madagascar
68.	Liliaceae	<i>Reineckia carnea</i> (Andrews) Kunth	whole plant	bronchitis	Asia
69.	Lythraceae	<i>Lagerstroemia indica</i> L.	roots, bark, leaves, flowers, seeds	antiinflamator, antimicrobial, cough, diabetes, diuretic, fever, purgative, wounds	Manipur
70.	Malpighiaceae	<i>Malpighia glabra</i> L.	leaves, fruits	diabetes, diarrhea, dysentery, fever, hepatitis, rheumatism, tuberculosis, wounds	Brazil, Surinam

71.	Malvaceae	<i>Ceiba pentandra</i> (L.) Gaertn.	whole plant	diabetes, diarrhea, diuretic, fever, gastropathy, headache	Africa South and central, America
72.		<i>Gossypium herbaceum</i> L	leaves, flowers	antibacterian, asthma, diabetes, diarrhea, dysentery, ear ache, gynaecological diseases, skin diseases	India
73.		<i>Hibiscus rosa-sinensis</i> L.	leaves, flowers	cough., diabetes, epilepsy, fever, gynaecological diseases, hemorrhoids, leprosis	India
74.	Marantaceae	<i>Maranta arundinacea</i> L.	leaves, flowers	diarrhea, skin diseases, wounds	India
75.	Moraceae	<i>Ficus benghalensis</i> L.	roots, leaves, fruits, seeds	anthelmitic, antimicrobial, burns, diabetes, diarrhea, dysentery, gastropathy, gynaecological diseases, rheumatism, skin diseases, wounds	India Bangladesh
76.		<i>Ficus benjamina</i> L.	bark, buds, flowers, fruits	antimicrobial, diabetes, diarrhea, dysentery, ulcer, leprosis, rheumatism, wounds	
77.		<i>Ficus carica</i> L.	leaves, fruits	anthelmitic, cancer, cough, diabetes, diarrhea, gastropathy, toothaches, tuberculosis, wounds	Afganistan, China, Romania
78.		<i>Ficus elastica</i> Roxb.	leaves, bark	anthelmitic, wounds	Afganistan
79.		<i>Ficus pumila</i> L.	whole plant, leaves	abscess, cancer, dysentery, fever, hemorrhoids, gynaecological diseases, rheumatism	Papua, New Guinea
80.		<i>Ficus religiosa</i> L.	whole plant, bark, leaves, flowers, fruits	asthma, diarrhea, dysentery, ear infection, gastropathy, podagra, skin diseases, snake bites, wounds	India, Nepal
81.	Myrtaceae	<i>Myrtus communis</i> L.	roots, leaves, fruits	cough, diarrhea, dysentery, ear diseases, epilepsy, fever, gynaecological diseases, rheumatism, toothaches, wounds	Romania, Tunisia
82.		<i>Psidium guajava</i> L.	leaves, buds	cough, diabetes, diarrhea, dysentery, fever, gastropathy	Hawaii Zimbabwe
83.	Oleaceae	<i>Olea europaea</i> L.	leaves, fruits	asthma, diabetes, diarrhea, fever, hemorrhoids, podagra, rheumatism toothaches	Romania
84.	Orchidaceae	<i>Vanilla planifolia</i> Jacks.	fruits	cough, fever, gynaecological diseases, toothaches, ulcer	Mexic
85.	Passifloraceae	<i>Passiflora quadrangularis</i> L.	roots, fruits	anthelmitic	Burma
86.	Phytolaccaceae	<i>Phytolacca dioica</i> L.	leaves, fruits	antiinflamator, antibacterian, mycosis, wounds	America
87.	Piperaceae	<i>Piper auritum</i> Kunth	leaves fruits	fever, gynaecological diseases, headache, podagra, wounds	
88.		<i>Piper nigrum</i> L.	fruits, seeds	anthelmitic, asthma, diarrhea, dysentery, fever, gastropathy, headache, rheumatism, scurvy, skin diseases, toothaches	Nepal

89.	Plumbaginaceae	Plumbago auriculata Lam.	roots, stem, leaves	antibacterian, gastropathy, headache, fever, wounds	India, South Africa
90.	Primulaceae	Ardisia crenata Sims	roots	fever, diabetes, gynaecological diseases, toothaches	
91.		Myrsine africana L.	fruits	anthelmintic, gynaecological diseases	
92.	Poaceae	Oryza sativa L.	buds, fruits	childbirth	Madagascar
93.		Saccharum officinarum L.	stem, fruits	blood purifier, cancer, diuretic, expectorant, gastropathy, strengthen the teeth's, wounds	Afganistan, Etiopia, Hawaii
94.	Podocarpaceae	Podocarpus neriifolius D. Don	leaves	rheumatism	Asia
95.	Punicaceae	Punica granatum L.	leaves, flowers, fruits, seeds	anthelmintic, fever, gastropathy, stop bleeding	Afganistan, Brazil, China, India
96.	Rosaceae	Eriobotrya japonica (Thunb.) Lindl.	leaves, flowers, fruits	antibacterian, cough, diuretic, fever, mouthwash	China, India
97.	Rubiaceae	Coffea arabica L.	seeds	arthritis, asthma, cough, diarrhea, dysentery, headache, malaria, osteoporosis, typhoid fever	Brazil, Etiopia
98.		Gardenia jasminoides J. Ellis	leaves, flowers, fruits	asthma, fever, insect bits, wounds	China
99.	Rutaceae	Citrus limon (L.) Osbeck	bark, leaves, fruits	antiscorbutic, cholera, headache, rheumatism, malaria	Brazil, Etiopia, Nepal, Zimbabwe
100.		Citrus maxima (Burm.) Merr.	flowers, fruits	antimicrobial, antibacterian, bleeding, cough, epilepsy	China
101.		Citrus reticulata Blanco	flowers, fruits, seed	anthelmitic, asthma, diarrhea, fever, gastropathy, hemorrhoids, scurvy, skin diseases	China
102.		Citrus sinensis (L.) Osbeck	leaves	childbirth, malaria	Brazil, Madagascar
103.		Murraya paniculata (L.) Jack	roots, bark, leaves, flowers	diarrhea, dysentery, fever, gastropathy, gynaecological diseases, snake bites, toothaches	Brazil
104.	Sarraceniaceae	Sarracenia purpurea L.	roots, leaves	cough, diuretic, fever, gastropathy	India
105.	Saururaceae	Houttuynia cordata Thunb.	whole plant, rhizom, stem, leaves	anti-bacterian, cholera, dysentery, fever, gynaecological diseases, hemorrhoids, skin diseases, ulcer	China
106.	Urticaceae	Boehmeria nivea (L.)	roots, leaves,	antiabortifacient, colic of pregnancy, diuretic, fever,	

		Gaudich	fruits	gynaecological diseases, haemostatic, haemorrhoids, wounds	
107.		Debregeasia longifolia (Burm. f.) Wedd.	leaves	itch	Asia
108.		Pilea microphylla (L.) Liebm.	whole plant, roots, stem	asthma, breathing difficulties, colic of pregnancy, diabetes, diuretic, infertility	Antile, Brazil, Guatemala, Jamaica, Panama
109.	Vitaceae	Cissus quadrangularis L.	stem, leaves	antibacterial, antifungal, anthelmintic, bleeding, epilepsy, gastropathy, leprosis, skin diseases, tumors	India, Thailanda
110.	Xanthorrhoeaceae	Aloë arborescens Mill.	leaves	gastropathy, rheumatism, skin diseases, tuberculosis, ulcer, wounds	Ecuador, Romania
111.		Aloë ferox Mill.	leaves	anthelmintic, analgesic, antimicrobial, arthritis, cancer, gastropathy, wounds	Madagascar
112.		Aloë vera (L.) Burm. f.	leaves	anthelmintic, diabetes, gastropathy, mycosis, skin diseases	Brazil, India
113.		Haworthia limifolia Marloth	leaves	burns, cough, gastropathy infertility, mycosis, wounds	Africa
114.		Phormium tenax J. R. Forst. & G. Forst.	leaves	anthelmintic, burns, diarrhea, dysentery, gastropathy rheumatism, gynaecological diseases, toothaches, wounds	New Zealand
115.	Zingiberaceae	Elettaria cardamomum (L.) Matton	whole platnt, fruits	asthma, diarrhea, gastropathy, kidney pain	
116.		Curcuma longa L.	roots	antimicrobial, cancer, diabetes, rheumatism, snake bites	Asia
117.		Alpinia officinarum Hance	roots	antibacterial, antifungal, diuretic, cancer	Asia
118.		Alpinia zerumbet (Pers.) B. L. Burt & R. M. Sm.	roots, leaves	antibacterian, antimicrobial, diuretic, rheumatism	Asia