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## HERBAL MEDICINE IN EGYPT

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### RÉSUMÉ

La médecine herbale a été utilisée en Egypte depuis longtemps. Les anciens égyptiens ont connu l'importance de beaucoup de plantes médicinales et les ont utilisées pour les mêmes raisons pour lesquelles elles sont récemment utilisées. La flore égyptienne comprend environ 2000 espèces plus certaines nouvelles, introduites et acclimatées récemment. Plusieurs plantes ont été étudiées pour leur usage en médecine herbal et beaucoup de travail est accompli pour explorer d'autres espèces. Quelques plantes utilisées en médecine herbal et présentés au marché égyptien sont aussi incluses.

### KEY-WORDS

EGYPT, MEDICINAL PLANTS, USES, HERBAL MEDICINE, RESEARCH PROJECTS

### MOTS-CLES

EGYPTE, PLANTE MEDICINALE, UTILISATION, MEDICINE HERBALE, PROJET DE RECHERCHE

Medicinal plants have been used as a source of remedies since ancient times. The ancient Egyptians were familiar with many medicinal herbs and were aware of their usefulness in treatment of various diseases. The healing of sick persons was carried out by priest doctors who prescribed and prepared medicaments. The first recorded prescriptions were found in Ancient Egyptian tombs. The writing on the temple walls and in the papyri revealed that Ancient Egyptians used many herbal drugs for the same purposes as they are used today. They used drugs of animal, plant, as well as mineral origins. From the first group, they used blood, meat, horn, milk, egg, honey and excreta. Among drugs of vegetable origin that they used are acacia, aloes, gums, myrrh, pomegranate, colocynth, linseed, squill, coriander, cumin, onions, anise, grapes, castor oil and wine. They used all plant organs such as roots, rhizomes, flowers, leaves, fruits, seeds, as well as oils. They applied their medicaments in the form of powders, pills, suppositories, creams, pastes and ointments.

When the Arabs came to Egypt, Arabic medicine was practiced and the art of healing made use of all available knowledge gained from different civilizations such as the Persian, Chinese, Greek, as well as the Ancient Egyptian. The books written by some famous workers such as Rases, Ibn Sina, Ibn El-bitar are still present and represent main references in herbal shops (known as Attars). Among these books are El-Kanoon Fil Tib (by Ibn Sina), Tazkaret Oli Albab (Dawood El-Antaki) and Mofradat El-Adwia (Ibn El-Bitar). Some people still go to such Attareen shops seeking herbal remedies since they are cheap and regarded as more safe.

Nowadays, there is an increasing trend towards the use of herbal medicine in Egypt that reflects an increasing confidence in such remedies. Recently, there are, two companies in Egypt that are specialised in the production of herbal drugs and herbal drug-based medicaments. In addition, certain extracts and/or herbal drug constituents are produced together with what is called modern or western medicine in some pharmaceutical companies.

The flora of Egypt includes about 2000 species of plants distributed in its different localities that vary in type of soil and prevailing climatic and other environmental conditions that hence encourage the growth of a wide range of plant species. In addition, many plants have been successfully introduced and acclimatized in Egypt.

About 300 drugs, mostly of local origin, can be found in Egyptian market today. The accompanying table (Table 1) shows examples of such herbal drugs, including their local and scientific names, part(s) used, and main active constituents and uses.

Our Pharmacognosy Department, as well as other similar departments in Egyptian Universities and other Research Centres, have taken on the task of studying both wild and cultivated plants with view to discovering their chemical constituents, pharmacological action and hence their possible pharmaceutical uses. The accompanying list shows the names of plants that are studied mainly for both the Master and Ph.D. degrees, in Egypt until 1989.

It is noteworthy that the occurrence of some wild growing plants in Egypt is becoming rare, and some species are threatened with extinction for a large number of reasons such as over-collection, land reclamation and the extension of building to many rural areas.

Therefore we are calling in Egypt for establishment of more protected areas to save such species from extinction. Moreover, we have projects aimed at the collection of seeds of such species and carrying out agricultural experiments to find optimum conditions for their cultivation. A study has recently been carried out on squill (*Urginea maritima*) and Egyptian henbane (*Hyoscyamus muticus*) for this purpose.

Beside native wild species, several medicinal plants are cultivated in Egypt such as liquorice (*Glycyrrhiza glabra*), *Mentha* species, *Thymus* spp., *Salvia* sp., rosemary (*Rosmarinus officinalis*), lavender (*Lavandula officinalis*), basil (*Ocimum basilicum*), several Umbelliferous plants such as fennel (*Foeniculum vulgare*), anise (*Pimpinella anisum*), caraway (*Carum carvi*), cumin (*Cuminum cyminum*), coriander (*Coriandrum sativum*), parsley (*Petroselinum crispum*), celery (*Apium graveolens*), dill (*Anethum graveolens*), ajowan (*Carum copticum*) and *Ammi visnaga* and *Ammi majus*. Other plants include fenugreek (*Trigonella foenum-graecum*), rose ( *Hibiscus sabdariffa*), aloes (*Aloe ferox*, *A. vera*), senna species (*Cassia acutifolia*), *Salix* species (*Salix safsaf*, *S. alba* and *S. tetrasperma*), *Nigella sativa*, *Olea europea*, Egyptian lupin (*Lupinus termis*), certain *Datura* and *Digitalis* species, belladonna (*Atropa belladonna*), marshmallow (*Althaea officinalis*), *Eucalyptus* spp., *Ambrosia maritima*, *Cymbopogon citratus*, *C. proximus*, chamomile (*Matricaria chamomilla*) sunflower (*Helianthus annuus*), henna (*Lawsonia inermis*), white and black mustard (*Sinapis alba*, *S. nigra*), rue (*Ruta graveolens*), psyllium (*Plantago psyllium*) and others.

It is evident that many countries bordering the Mediterranean share many plant species in common. It will be for the benefit of all countries to cooperate among themselves and exchange their experiences and the results of scientific work carried out on medicinal plants.

TABLE 1: Some herbal drugs found in the Egyptian market

Uses	Part used	Latin name & family	Local name
Demulcent, suspension. agent	Gum	<i>Acacia arabica</i> L. <i>Leguminosae</i>	Sant
Contraceptive, cosmetic, aphrodisiac	Fruits, Flowers	<i>Acacia farnesiana</i> (L.)Willd. <i>Leguminosae</i>	Fitnah
Digestive, cosmeti, anti-inflammatory	Flowering tops	<i>Achillea millefolium</i> L. <i>Compositae</i>	Hazanbal
Carminative, general tonic	Rhizomes	<i>Acorus calamus</i> L. <i>Araceae</i>	Qasab ad-dharirah
Hypotensive, hypoglyce-mic, anthelmintic	Bulbs	<i>Allium sativum</i> L. <i>Liliaceae</i>	Thawm
Laxative, cholagogue dermatitis	Juice	<i>Aloe vera</i> L. <i>Liliaceae</i>	Sabbar
Emollient , anticough.	Leaves, roots	<i>Althea officinalis</i> L. <i>Malvaceae</i>	Khitmi
Antidiabetic, anti-spasmodic, lipotropic	Herb	<i>Ambrosia maritima</i> L. <i>Compositae</i>	Damsisa
Spasmolytic, remove urinary calculi	Fruits	<i>Ammi visnaga</i> L. <i>Umbelliferae</i>	Khilla Balady
Dermatitis, lecodermia	Fruits	<i>Ammi majus</i> L. <i>Umbelliferae</i>	Khella shytani
Aphrodisiac, tonic	Roots	<i>Anacyclus pyrethrum</i> L. <i>Compositae</i>	Aqir qush
Cardiotonic	Herb	<i>Anastatica hierochuntica</i> <i>Cruciferae</i>	Kaff maryam
Digestive, carminative, antispasmodic	Herb, fruits	<i>Anethum graveolens</i> L. <i>Umbelliferae</i>	Shibith
Circulatory stimulant	Herb	<i>Anthemis cotula</i> <i>Compositae</i>	Sheih
Diuretic, antispasmodic	Fruits, herb	<i>Apium graveolens</i> L. <i>Umbelliferae</i>	Karafs
Dermatitis, CN stimulant , antiarterisclerotic	Fl.heads, rhizomes	<i>Arnica montana</i> L. <i>Compositae</i>	Khaniq el Fahd
Anthelmintic	Fl. buds	<i>Artemisia cina</i> Ber. <i>Compositae</i>	Shih balady
Anthelmintic	Fl. heads	<i>Artemisia herba-alba</i> <i>Compositae</i>	Shih
Hypoglycemic, urinary infections	Fruits, leaves	<i>Balanites aegyptiaca</i> (L.) Del. <i>Simarubaceae</i>	Haglig
Laxative, contraceptive	Roots	<i>Bryonia alba</i> L. <i>Cucurbitaceae</i>	Haleq el Shar
Skin diseases, sun burns, emmenagogue	Fl.heads, leaves	<i>Calendula officinalis</i> L. <i>Compositae</i>	Oqhwan
Haemostatic, hypotensive, diaphoretic, emmenagogue	Herb, roots	<i>Capsella bursa-pastoris</i> <i>Cruciferae</i>	Kis er Rai
Rubifacient, anti-rheumatic	Fruits	<i>Capsicum minimum</i> <i>Solanaceae</i>	Shattah
Digestive, carminative, antispasmodic	Fruits	<i>Carum carvi</i> L. <i>Umbelliferae</i>	Karawyah
Antispasmodic, antiseptic, in renal calculi.	Fruits	<i>Carum copticum</i> Benth. <i>Umbelliferae</i>	Nakhwah



Anticholestrlemic, emmenagogue, anti-inflammatory	Flowers	<i>Carthamus tinctorius</i> L. <i>Compositae</i>	Osfur
Laxative ,diaphoretic	Leaves &fruits	<i>Cassia acutifolia</i> Del. <i>Leguminosae</i>	Sanna makki
Laxative	Pods	<i>Cassia fistula</i> L. <i>Leguminosae</i>	Khiyar shamber
Antidiarrhoea, refreshing drink	Pods	<i>Ceratonia siliqua</i> L. <i>Leguminosae</i>	Kharrub
Anthelmintic	Leaves, fruits	<i>Chenopodium ambrosioides</i> L. <i>Chenopodiaceae</i>	Zorbeih
Tonic, lipotropic, hypoglycemic, laxative	Roots, seeds,	<i>Cichorium intybus</i> L. <i>Compositae</i>	Shikoryah
Carminative, flavouring agent antiseptic, mild astringent cathartic	Bark	<i>Cinnamomum zeylanicum</i> <i>Lauraceae</i>	Kerfa
Cathartic, diuretic, dermatitis	Fruit pulp, seeds	<i>Citrullus colocynthis</i> Schrad <i>Cucurbitaceae</i>	Hanzal
Antiscorbatic ,anti-rheumatic,disinfectant.	Fruit ,peels	<i>Citrus limon</i> L. <i>Rutaceae</i>	Laymun
Disinfectant, antidysenteric, dermatitis	Oleo gum resin	<i>Commiphora mukul</i> L. <i>Burseraceae</i>	Mur
Digestive, carminative, hypoglycemic	Fruits & herb	<i>Coriandrum sativum</i> L. <i>Umbelliferae</i>	Kuzbarah
Appetizer,carminative, antispasmodic, emmenagogue	styles & stigmas	<i>Crocus sativus</i> L. <i>Iridaceae</i>	Zafraan
Prostrate adjuvant, vermifuge	Seeds	<i>Cucurbita pepo</i> L. <i>Cucurbitaceae</i>	Kusah
Digestive, carminative, antispasmodic	Fruits	<i>Cuminum cyminum</i> L. <i>Umbelliferae</i>	Kammun
Antidiabetic, control of blood level	Gum	<i>Cyamobsis tetragonolobus</i> <i>Leguminosae</i>	Guar
Demulcent	Fruits	<i>Cydonia oblonga</i> Miller <i>Rosaceae</i>	Safargal
Antispasmodic , antiseptic, cosmetic insect repellent,	Leaves	<i>Cymbopogon citratus</i> (Nees) Stapf <i>Gramineae</i>	Hashishet el-lymun
Antispasmodic, removes urinary calculi	Herb	<i>Cymbopogon proximus</i> <i>Gramineae</i>	Halfa Barr
Cholagogue, antidiabetic, diuretic	Leaves	<i>Cynara scolymus</i> DC. <i>Compositae</i>	Kharshuf
Control of urination	Tubers	<i>Cyperus longus</i> DC. <i>Cyperaceae</i>	Sud
Aphrodisiac, diuretic	Seeds, roots	<i>Daucus carota</i> L. <i>Umbelliferae</i>	Gazar baladi
Lipotropic, laxative, abortifacient	Fruits	<i>Ecballium elaterium</i> (L.) A.Rich. <i>Cucurbitaceae</i>	Qitha el-himar
Aphrodisiac, diuretic	Seeds, leaves	<i>Eruca sativa</i> Miller <i>Cruciferae</i>	Gargirr
Tonic, emollient.	Fruits	<i>Ficus carica</i> L. <i>Moraceae</i>	Tin barri
Antidiarrhoea,dermatitis	Fruits, latex	<i>Ficus sycomorus</i> L. <i>Moraceae</i>	Gummayz

Carminative, antispasmodic	Fruits	<i>Foeniculum vulgare</i> Miller <i>Umbelliferae</i>	Shamar
Demulcent, tonic	Roots	<i>Glossostemon bruguieri</i> Desf. <i>Leguminosae</i>	Sahlab
Anticough, antiulcer, laxative, digestive	Roots	<i>Glycyrrhiza glabra</i> <i>Leguminosae</i>	Erq Sus
Expectorant	Roots	<i>Gypsophila struthium</i> Loeffl. <i>Caryophyllaceae</i>	Kundus
Hypocholesterolemic	Seeds, leaves	<i>Helianthus annuus</i> L. <i>Compositae</i>	Abbad esh shams
Hypotensive, refreshing drink	Calyx	<i>Hibiscus sabdariffa</i> L. <i>Malvaceae</i>	Karkadeih
Sedative, diuretic, anti-inflammatory	Female infloresc.	<i>Humulus lupulus</i> L. <i>Cannabinaceae</i>	Hashishet ed-dinar
Antidiarrhoea, antirheumatic	Berries, leaves	<i>Juniperus oxycedrus</i> L. <i>Cupressaceae</i>	Arar
Digestive, carminative, antiseptic	Leaves, fruits	<i>Laurus nobilis</i> <i>Lauraceae</i> L.	Ghar
Antispasmodic, stimulant, cosmetic	Fl.tops	<i>Lavandula officinalis</i> L. <i>Labiatae</i>	Khuzami
Antiseptic, antifungal, colouring matter	Leaves	<i>Lawsonia inermis</i> L. <i>Lythraceae</i>	Henna
Antiasthma, expectorant.	Herb, seeds	<i>Lepidium latifolium</i> L. <i>Leguminosae</i>	Ussab
Emollient, anticough	Seeds	<i>Linum usitatissimum</i> L. <i>Linaceae</i>	Kattan
Antidiabetic, dermatitis	Seeds	<i>Lupinus termis</i> Forssk. <i>Leguminosae</i>	Termis
Emollient, anticough, skin diseases.	Leaves, flowers	<i>Malva sylvestris</i> L. <i>Malvaceae</i>	Khubbazi
Anticough, bronchial disorders	Leaves, Fl. tops	<i>Marrubium vulgare</i> L. <i>Labiatae</i>	Sharir
Antispasmodic, dermatitis, sedative	Fl. heads	<i>Matricaria chamomilla</i> L. <i>Compositae</i>	Babung
Carminative, anti-spasmodic, antiseptic	Leaves, fl.tops	<i>Mentha piperita</i> L. <i>Labiatae</i>	Nanaa
Antislimming, tonic.	Seeds	<i>Moringa peregrina</i> L. <i>Moringaceae</i>	Yasar
Antidiabetic, astringent, haemostatic	Leaves, flowers	<i>Myrtus communis</i> L. <i>Myrtaceae</i>	As
Bronchial asthma, immunostimulant, diuretic	Seeds	<i>Nigella sativa</i> L. <i>Ranunculaceae</i>	Habbet el barakah
Antispasmodic, digestive, galactagogue	Leaves, Fl.tops	<i>Ocimum basilicum</i> L. <i>Labiatae</i>	Rayhan
Nutrient, antidiarrhoea	Under-ground parts	<i>Orchis mascula</i> L. <i>Orchidaceae</i>	Sahlab
Digestive, mouth wash, bronch. disorders,	Herb	<i>Origanum majoranum</i> L. <i>Labiatae</i>	Mardaqush
Anthelmintic, antirheumatic	Seeds	<i>Peganum harmala</i> L. <i>Zygophyllaceae</i>	Harmal
Diuretic, antirheumatic, emmenagogue.	Fruits, herb	<i>Petroselinum sativum</i> (L.) Hoffm. <i>Umbelliferae</i>	Maqdunis
Carminative, sedative, mild diuretic, anti-spasmodic	Fruits	<i>Pimpinella anisum</i> L. <i>Umbelliferae</i>	Yansun

Expectorant, antiseptic, renal colic	Resin	<i>Pistacia lentiscus</i> L. <i>Anacardiaceae</i>	Fustuq
Tonic, antifebrile , anthelmintic	Bark , leaves	<i>Populus</i> spp. <i>Salicaceae</i>	Hawr
Emollient, antihemorrhoids	Herb	<i>Portulaca oleracea</i> L. <i>Portulacaceae</i>	Reglah
Tonic	Root	<i>Prunus mahaleb</i> L. <i>Rosaceae</i>	Mahlab
Antidiarrhoea, haemo-static, anthelmintic	Seed, fruit, bark	<i>Punica granatum</i> L. <i>Punicaceae</i>	Rumman
Carminative, cholagogue, antiseptic	Leaves, Fl.tops	<i>Rosmarinus officinalis</i> L. <i>Labiatae</i>	Hassa luban
Laxative, diuretic, cholagogue, lipotropic	Root stock	<i>Rubia tinctorium</i> L. <i>Rubiaceae</i>	Fuwwah
Haemostatic, astringent	Rhizomes	<i>Ruscus sculentus</i> L. <i>Liliaceae</i>	As barri
Anthelmintic, emmenagogue, capillary fragility	Leaves	<i>Ruta graveolens</i> L. <i>Rutaceae</i>	Sdhab
Antirheumatic, antipyretic	Leaves , barks	<i>Salix</i> spp. <i>Salicaceae</i>	Safsaf
Emollient, gargle, digestive, cholagogue,	Leaves , fl. tops	<i>Salvia officinalis</i> L. <i>Labiatae</i>	Maryamiya
Expectorant,diaphoretic, antirheumatic	Rhizomes	<i>Saponaria officinalis</i> L. <i>Caryophyllaceae</i>	Sabuniyah
Soothing, cooking purposes	Seeds	<i>Sesamum indicum</i> L. <i>Pedaliaceae</i>	Simsim
Antihepatotoxic	Fruits	<i>Silybum marianum</i> (L.) Gaertn. <i>Compositae</i>	Atub
Appetizer, condiment, antirheumatic	Seeds	<i>Sinapis alba</i> L. <i>Cruciferae</i>	Khrdai abiad
Appetizer, condiment, antirheumatic	Seeds	<i>Sinapis nigra</i> L. <i>Cruciferae</i>	Khardal aswad
Laxative	Fruits, leaves	<i>Tamarindus indica</i> L. <i>Tamaricaceae</i>	Tmr hindi
Antiseptic, antispasmodic,	Leaves, fl.tops	<i>Thymus vulgaris</i> L. <i>Labiatae</i>	Satar
Anticough, sedative	Infloresc, bark	<i>Tilia sylvestris</i> <i>Tiliaceae</i>	Zayzafun
Demulcent, nutritive	Seeds	<i>Trigonella foenum-graecum</i> L. <i>Leguminosae</i>	Helbah
Diuretic, diaphoretic, antipyretic , emmenagogue	Herb	<i>Verbena officinalis</i> L. <i>Verbenaceae</i>	Ri el hamam
Relieve sore throat.	Fruits	<i>Ziziphus jujuba</i> Miller <i>Labiatae</i>	Unnab

## LIST OF PLANTS INCLUDED IN SCIENTIFIC THESES AND RESEARCH PAPERS

- |     |  |      |   |
|-----|--|------|---|
| 1.  | <i>Abrus precatorius</i> L.                        | 54.  | <i>Arthrocnemum glaucum</i> (Del.)<br>Ung - Sternb.         |
| 2.  | <i>Acacia arabica</i> L.                           | 55.  | <i>Asclepias curassavica</i> L.                             |
| 3.  | <i>Acacia farnesiana</i> L.                        | 56.  | <i>Asparagus stipularis</i> Forssk.                         |
| 4.  | <i>Acacia senegalensis</i> L.                      | 57.  | <i>Aster squamatus</i> L.                                   |
| 5.  | <i>Achillea fragrantissima</i> Sch.B.p.            | 58.  | <i>Asteriscus graveolens</i> Less.                          |
| 6.  | <i>Achillea santolina</i> L.                       | 59.  | <i>Astragalus alexandrinus</i> Boiss.                       |
| 7.  | <i>Acokanthera spectabilis</i> Hook fil.           | 60.  | <i>Astragalus boeticus</i> L.                               |
| 8.  | <i>Adhatoda vasica</i> Nees                        | 61.  | <i>Astragalus cremophilus</i> Boiss.                        |
| 9.  | <i>Adonis autumnalis</i> L.                        | 62.  | <i>Astragalus tomentosus</i> Lam.                           |
| 10. | <i>Adonis dentata</i> Del.                         | 63.  | <i>Astragalus trigonus</i> DC.                              |
| 11. | <i>Aegialophila pumila</i> (Jusl.) Boiss.          | 64.  | <i>Atrocarpus integrifolia</i> Link                         |
| 12. | <i>Aegle marmelos</i> (L.) Corr.                   | 65.  | <i>Atropa belladonna</i> L.                                 |
| 13. | <i>Aerva lanata</i> Juss.                          | 66.  | <i>Avicennia officinalis</i> L.                             |
| 14. | <i>Aerva tomentosa</i> Forsk.                      | 67.  | <i>Barleria cristata</i> L.                                 |
| 15. | <i>Agave americana</i> L. var. <i>marginata</i>    | 68.  | <i>Bassia muricata</i> Murr.                                |
| 16. | <i>Agave decipiens</i> Baker                       | 69.  | <i>Bauhinea purpurea</i> L.                                 |
| 17. | <i>Agave sisalana</i> (Engelm.) Drumm.<br>& Prain. | 70.  | <i>Bauhinia variegata</i> L.                                |
| 18. | <i>Ajuga iva</i> L.                                | 71.  | <i>Beaumontia grandiflora</i> Wall.                         |
| 19. | <i>Albizia julibrissin</i> Durazz.                 | 72.  | <i>Bolusanthus speciosus</i><br>(Bolus) Harms               |
| 20. | <i>Alhagi maurorum</i> Medic.                      | 73.  | <i>Brassica juncea</i> (L.) Czern.                          |
| 21. | <i>Allium aschersonianum</i> Barb.                 | 74.  | <i>Brassica nigra</i> L.                                    |
| 22. | <i>Allium cepa</i> L.                              | 75.  | <i>Brassica oleracea</i> L. var. <i>capitata</i> L.         |
| 23. | <i>Allium sativum</i> L.                           | 76.  | <i>Bryonia cretica</i> L.                                   |
| 24. | <i>Aloe grandidentata</i> S.D.                     | 77.  | <i>Calendula arvensis</i> L.                                |
| 25. | <i>Aloe vera</i> L.                                | 78.  | <i>Calendula officinalis</i> L.                             |
| 26. | <i>Aithea officinalis</i> L.                       | 79.  | <i>Calligonum comosum</i> L'Her.                            |
| 27. | <i>Althea rosea</i> L.                             | 80.  | <i>Callistemon lanceolatus</i> DC.                          |
| 28. | <i>Amberboa tubuliflora</i> Murb.                  | 81.  | <i>Callistemon rigidus</i> R.Br.                            |
| 29. | <i>Ambrosia maritima</i> L.                        | 82.  | <i>Calotropis procera</i> (Aiton) R.Br.                     |
| 30. | <i>Ammi majus</i> L.                               | 83.  | <i>Calycodendron milnei</i> (A.Gray)<br>A.C.Smith.          |
| 31. | <i>Ammi visnaga</i> L.                             | 84.  | <i>Canavalia obtusifolia</i> DC.                            |
| 32. | <i>Anabasis articulata</i> L.                      | 85.  | <i>Canna flaccida</i> Salisb.                               |
| 33. | <i>Anagallis arvensis</i> L.                       | 86.  | <i>Canna indica</i> L.                                      |
| 34. | <i>Anastatica hierochuntica</i> L.                 | 87.  | <i>Canna orientalis</i> Roscoe                              |
| 35. | <i>Anchusa milleri</i> Willd.                      | 88.  | <i>Cannabis sativa</i> L.                                   |
| 36. | <i>Annona cherimola</i> Miller                     | 89.  | <i>Cardiospermum halicacabum</i> L.                         |
| 37. | <i>Annona glabra</i> L.                            | 90.  | <i>Carduncellus eriocephalus</i> Boiss.                     |
| 38. | <i>Annona muricata</i> L.                          | 91.  | <i>Carduus getulus</i> Pomel                                |
| 39. | <i>Annona squamosa</i> L.                          | 92.  | <i>Carduus nutans</i> L.                                    |
| 40. | <i>Anthemis nobilis</i> L.                         | 93.  | <i>Carica papaya</i> L.                                     |
| 41. | <i>Anthemis pseudocotula</i> Boiss.                | 94.  | <i>Carissa carandas</i> L.                                  |
| 42. | <i>Antirrhinum majus</i> L.                        | 95.  | <i>Carissa grandiflora</i> DC.                              |
| 43. | <i>Apium graveolens</i> L.                         | 96.  | <i>Carthamus glaucus</i> Bieb.subsp.<br><i>alexandrinus</i> |
| 44. | <i>Argemone mexicana</i> L.                        | 97.  | <i>Carthamus mariuticus</i> Del.                            |
| 45. | <i>Arisarum vulgare</i> Schott.                    | 98.  | <i>Carthamus tinctorius</i> L.                              |
| 46. | <i>Aristolochia elegans</i> Mast.                  | 99.  | <i>Carum copticum</i> Benth.                                |
| 47. | <i>Artemisia absinthium</i> L.                     | 100. | <i>Carum carvi</i> L.                                       |
| 48. | <i>Artemisia argentea</i> L'Hér.                   | 101. | <i>Cassia acutifolia</i> Del.                               |
| 49. | <i>Artemisia argyi</i> Levl. & Vant.               | 102. | <i>Cassia didymobotrya</i> Fres.                            |
| 50. | <i>Artemisia cina</i> Berg.                        | 103. | <i>Cassia fistula</i> L.                                    |
| 51. | <i>Artemisia herba alba</i> L.                     |      |   |
| 52. | <i>Artemisia judaica</i> L.                        |      |   |
| 53. | <i>Artemisia monosperma</i> L.                     |      |   |



104. *Cassia javanica* L.  
 105. *Cassia nigricans*  
 106. *Cassia obovata* Coll.  
 107. *Cassia siamea* Lam.  
 108. *Cassia spectabilis* DC.  
 109. *Catha edulis* Forssk.  
 110. *Centaurea aegyptiaca* Del.  
 111. *Centaurea alexandrina* Del.  
 112. *Centaurea calcitrapa* L.  
 113. *Centaurea cineraria* L.  
 114. *Centaurea moschata* L.  
 115. *Centaurea ragusina* L. subsp. ragusina  
 116. *Centaurium pulchellum* Sw.  
 117. *Centaurium spicatum* (L.) Fritsch  
 118. *Cerantonia siliqua* L.  
 119. *Cerbera odollam* Gaertn.  
 120. *Cestrum aurantiacum* Lindl.  
 121. *Cestrum diurnum* L.  
 122. *Cestrum elegans* (Brogn.) Schlect.  
 123. *Chenopodium ambrosioides* L.  
 124. *Chenopodium murale*  
 125. *Corchorus olitorius* L.  
 126. *Chrysanthemum anethifolium* Brouss.  
 127. *Chrysanthemum cinerarifolium* Visiani  
 128. *Chrysanthemum coronarium* L.  
 129. *Chrysanthemum manifoldium* Ramat.  
 130. *Cichorium intybus* L.  
 131. *Cichorium pumilum* L.  
 132. *Citrullus colocynthis* (L.) Schrader  
 133. *Citrus aurantifolia* Swingle  
 134. *Citrus aurantium* L.  
 135. *Citrus aurantium* L. var. *amara*  
 136. *Citrus aurantium* L. var. *deliciosa*  
 137. *Citrus aurantium* L. var. *sinensis*  
 138. *Citrus bergamia* (Risso & Poiteau) Wight & Arn.  
 139. *Citrus limetta* L.  
 140. *Citrus limon* (L.) Burm. fil.  
 141. *Citrus nobilis* Lour  
 142. *Citrus* × *paradisi* Macfad.  
 143. *Citrus reticulata* Blanco  
 144. *Citrus sanguinea* Engl.  
 145. *Citrus trifoliata* L.  
 146. *Cleistopholis patens* Engl. & Diels.  
 147. *Cleome amblycarpa* Barr. & Murb.  
 148. *Cleome droserifolia* (Forssk) Del.  
 149. *Clerodendron inermis* L.  
 150. *Clivia miniata* Regel  
 151. *Cocculus laurifolius* DC.  
 152. *Coffea arabica* L.  
 153. *Convolvulus althaeoides* L.  
 154. *Convolvulus arvensis* L.  
 155. *Convolvulus lanatus* Vahl  
 156. *Conyza dioscorides* (L.) Desf.  
 157. *Conyza linifolia* Willd.  
 158. *Cordia myxa* L.  
 159. *Coriandrum sativum* L.  
 160. *Cornulacca monacantha* Del.  
 161. *Cotula cinerea* Del.  
 162. *Crinum americanum* L.  
 163. *Crinum augustum* Rox.  
 164. *Crinum bulbispermum* Milne  
 165. *Crotolaria aegyptiaca* Benth  
 166. *Crotolaria madurensis* R. Wight  
 167. *Crucianella maritima* L.  
 168. *Cucumis melo* L.  
 169. *Cucurbita maxima* Duchesne  
 170. *Cucurbita pepo* var. *medullosa* Alef.  
 171. *Cuminum cyminum* L.  
 172. *Cupressus arizonica* Greene  
 173. *Cupressus lusitanica* Miller  
 174. *Cupressus sempervirens* L.  
 175. *Curcuma longa* L.  
 176. *Cyamopsis tetragonoloba* Taub.  
 177. *Cymbopogon citratus* L.  
 178. *Cymbopogon nardus* Rendle  
 179. *Cymbopogon proximus* Stapf.  
 180. *Cynandropsis pentaphylla* Harhus  
 181. *Cyperus rotundus* L.  
 182. *Datura discolor* Berth.  
 183. *Datura fastosa* L.  
 184. *Datura ferox* L.  
 185. *Datura innoxia* Miller  
 186. *Datura metel* L.  
 187. *Datura meteloides* DC.  
 188. *Datura stramonium* L.  
 189. *Datura stramonium* var. *inermis* Safford  
 190. *Datura tatula* L.  
 191. *Datura tatula* L. var. *inermis* Safford  
 192. *Daucus carota* L. var. *boissieri* Schweinf.  
 193. *Daucus glaber* Forssk  
 194. *Delphinium ajacis* L.  
 195. *Delphinium barbeyi* Huth.  
 196. *Delphinium belladonna* Kelw.  
 197. *Derris elliptica* L.  
 198. *Digitalis lanata* Ehrh.  
 199. *Digitalis mertonensis* Buxt. & Darl.  
 200. *Digitalis parviflora* Jacq.  
 201. *Digitalis purpurea* L.  
 202. *Digitalis purpurea* var. *miniana* Sampaio  
 203. *Digitalis viridiflora* Lindl.  
 204. *Dioscorea opposita* Thunb.  
 205. *Dioscorea tokoro* Makino  
 206. *Dolichois lablab* L.  
 207. *Ducrosia ismaelis* Aschers.  
 208. *Duranta plumeri* Jacq.

209. *Duranta repens* L.  
 210. *Ecballium elaterium* A.Rich.  
 211. *Echiochilon fruticosum* Desf.  
 212. *Echium sericeum* Vahl  
 213. *Eclipta prostrata* (L.) L.  
 214. *Emex spinosus* (L.) Campd.  
 215. *Eminium spiculatum* (Blume) Schott.  
 216. *Enterolobium cyclocarpum* Griseb.  
 217. *Ephedra alata* Decne  
 218. *Ephedra alta* C.A.Meyer  
 219. *Ephedra sinica* Stapf  
 220. *Erigeron crispus* Pourr.  
 221. *Eruca sativa* Mill.  
 222. *Erucaria pinnata* Tackl.  
 223. *Erythraea spicata* L. = *Centaurium spicatum* (L.) Fritsch  
 224. *Erythrina variegata* L.  
 225. *Eschscholtzia californica* Cham.  
 226. *Ethulia conyzoides* L.f. var. *gracilis* Asch & Schweinf.  
 227. *Eucalyptus citriodora* Hooker  
 228. *Eucalyptus cornuta* Labill.  
 229. *Eucalyptus goniocalyx* F.J.Muell.  
 230. *Eucalyptus globulus* Labill.  
 231. *Eucalyptus macrocarpa* Hooker  
 232. *Eucalyptus maculata* var. *citriodora* Bailey  
 233. *Euphorbia hypericifolia* L.  
 234. *Euphorbia geniculata* Ort.  
 235. *Euphorbia helioscopia* L.  
 236. *Euphorbia heterophylla* L.  
 237. *Euphorbia paralias* L.  
 238. *Euphorbia peplus* L.  
 239. *Euphorbia plucherrina* Willd  
 240. *Euphorbia retusa* Forssk.  
 241. *Euphorbia terracina* L.  
 242. *Fagonia arabica* L.  
 243. *Fagonia bruguieri* DC.  
 244. *Fagonia cretica* L.  
 245. *Fagonia glutinosa* Del.  
 246. *Fagonia mollis* Del.  
 247. *Fagonia parviflora* Boiss.  
 248. *Fagopyrum esculentum* L.  
 249. *Farsetia aegyptia* Turra  
 250. *Ficus benghalensis* L.  
 251. *Ficus benjamina* L.  
 252. *Ficus elastica* Roxb.  
 253. *Ficus platyphylla* Del.  
 254. *Fuymaria densiflora* DC.  
 255. *Fumaria judaica* Boiss.  
 256. *Glacium flavum* Crantz  
 257. *Glossostemon bruguieri* Desf.  
 258. *Glycyrrhiza glabra* L.  
 259. *Gossypium barbadense* L.  
 260. *Haemanthus multiflorus* Martyn  
 261. *Haloxylon salicornicum* auct. non Bunge  
 262. *Haplophyllum tuberculatum* (Forssk) A.Juss.  
 263. *Hedera helix* L.  
 264. *Helianthus annuus* L.  
 265. *Heliotropium digynum* Forssk.  
 266. *Hemerocallis aurantica*  
 267. *Hibiscus sabdariffa* L.  
 268. *Hippeastrum vittatum* L'Her.  
 269. *Hyoscyamus albus* var. *desertorum*  
 270. *Hyoscyamus muticus* L.  
 271. *Hyoseris lucida* L.  
 272. *Hypocoum aegyptiacum* (Forssk.) Asch & Schweinf.  
 273. *Hyossopus officinalis* L.  
 274. *Inula crithmoides* L.  
 275. *Iochioma lanceolatum*  
 276. *Iphiona mucronata* (Forssk) Asch & Schweinf  
 277. *Iphiona scabra* DC.  
 278. *Ipomoea batatas* (L.)Lam.  
 279. *Iris germanica* L. var. *alba*  
 280. *Jasminium mesnyi* Hance  
 281. *Jasminum grandiflorum* L.  
 282. *Jasminum sambac* (L.)Aiton  
 283. *Jasonia montana* (Vahl) Botsch.  
 284. *Jatropha curcas* L.  
 285. *Joannesia principes* Veil.  
 286. *Khaya senegalensis* A. Juss.  
 287. *Lactuca saligna* L.  
 288. *Lagenaria breviflora* Robert.  
 289. *Lagenaria siceraria* (Mol.) Standl.  
 290. *Lantana camara* L.  
 291. *Launea mucronata* Forssk  
 292. *Launaea nudicaulis* (L.) Hook.f.  
 293. *Launaea resedifolia* (Willd.) Kuntze  
 294. *Launaea spinosa* Forssk.  
 295. *Launaea tenuiloba* Boiss.  
 296. *Laurus nobilis* L.  
 297. *Lavandula officinalis* L.  
 298. *Lawsonia inermis* L.  
 299. *Ligustrum ovalifolium* Hassk.  
 300. *Limonium sinuatum* Mill.  
 301. *Limonium tubiflorum* (Del.) Ktze.  
 302. *Linum usitatissimum* L.  
 303. *Lotus arabicus* L.  
 304. *Lotus creticus* L.  
 305. *Lupinus termis* Forssk.  
 306. *Lycium shawii* Roem & Sch.  
 307. *Lycopersicum prumiforme* Miller  
 308. *Lygos raetam* (Forssk.) Heywood  
 309. *Magnolia grandiflora* L.  
 310. *Majorana hortensis* Moench  
 311. *Malabaila suaveolens* Coss.  
 312. *Malva arborea* L.

313. *Malva rotundifolia* Desf.  
 314. *Malva sylvestris* L.  
 315. *Malva viscosus arborea* L.  
 316. *Marrubium alysson* L.  
 317. *Mathiola livida* (Del.) DC.  
 318. *Matricaria chamomilla* L.  
 319. *Medicago sativa* L.  
 320. *Melia azedarch* L.  
 321. *Melilotus indica* (L.) All. var. *tommasinii* Jord.  
 322. *Melilotus siculus* Turra  
 323. *Mentha piperita* L.  
 324. *Mentha pulegium* L.  
 325. *Mentha spicata* L.  
 326. *Mentha viridis* L.  
 327. *Moltkiopsis ciliata* Johnst.  
 328. *Montanoa bipinnatifida* Kock.  
 329. *Murraya exotica* L.  
 330. *Muscari comosum* Miller  
 331. *Myrtus communis* L.  
 332. *Narcissus tazetta* L.  
 333. *Nerium oleander* L.  
 334. *Nicotiana glauca* R.C Grah.  
 335. *Nicotiana rustica* L.  
 336. *Nicotiana tabacum* L.  
 337. *Nigella sativa* L.  
 338. *Nitraria retusa* (Forssk) Asch.  
 339. *Nymphaea lotus* L.  
 340. *Ocimum basilicum* L.  
 341. *Ocimum canum* Sims.  
 342. *Ocimum gratissimum* L.  
 343. *Ocimum rubrum* L.  
 344. *Ononis vaginalis* Vahl.  
 345. *Opuntia ficus-indica* L.  
 346. *Orchradenus baccatus* Del.  
 347. *Origanum majorana* L.  
 348. *Oropordum alexandrinum* Boiss.  
 349. *Oryza sativa* L.  
 350. *Oxandra xylopioides* Diels  
 351. *Pancratium maritimum* L.  
 352. *Pancratium sickenbergerei* Asch. & Schweinf. ex Boiss.  
 353. *Panicum turgidum* Forssk.  
 354. *Papaver argemone* L.  
 355. *Papaver bracteatum* L.  
 356. *Papaver dubium* L.  
 357. *Papaver nudicaule* L.  
 358. *Papaver orientale* L.  
 359. *Papaver rhoeas* L.  
 360. *Papaver somniferum* L.  
 361. *Pastinaca sativa* L.  
 362. *Peganum harmala* L.  
 363. *Pelargonium fragrans* Willd.  
 364. *Pelargonium graveolens* L'Hér.  
 365. *Pergularia tomentosa* L.  
 366. *Petroselinum sativum* Hoffm.  
 367. *Phlomis aurea* Decne.  
 368. *Phoenix dactylifera* L.  
 369. *Physalis peruviana* L.  
 370. *Phytolacca americana* L.  
 371. *Pimenta acris* Kostel.  
 372. *Pimenta dioica* (L.) Merr.  
 373. *Pimpinella anisum* L.  
 374. *Pituranthus triradiatus* (Hochst.) Asch. & Schweinf.  
 375. *Pituranthus tortuosrus* (Desf.) Benth.  
 376. *Plantago albicans* L.  
 377. *Plantago coronopus* L.  
 378. *Plantago crypsoides* Boiss.  
 379. *Plantago cylindrica* Forssk.  
 380. *Plantago major* L.  
 381. *Plantago notata* Lag.  
 382. *Plantago ovata* Forssk.  
 383. *Plantago psyllium* L.  
 384. *Plumbago capensis* Thunb.  
 385. *Plumeria rubra* L.  
 386. *Polianthus tuberosa* L.  
 387. *Polycarpaea repens* Forssk.  
 388. *Polycarpon alsinifolium* (Biv.) DC.  
 389. *Polygonum salicifolium* L.  
 390. *Portulaca oleracea* L.  
 391. *Pseudorlaya pumila* (L.) Murb.  
 392. *Psidium guajava* L.  
 393. *Pulicaria crispa* Forssk.  
 394. *Pulicaria dysenterica* L.  
 395. *Pulicaria incisa* (Lam.) DC.  
 396. *Pulicaria undulata* L.  
 397. *Ranunculus sativus* L.  
 398. *Ranunculus sceleratus* L.  
 399. *Rauwolfia canescens* L.  
 400. *Reseda pruirosa* Del.  
 401. *Reaumuria hirtella* Jaub & Sp.  
 402. *Ricinus communis* L.  
 403. *Rosa rugosa* Thunb.  
 404. *Rosmarinus officinalis* L.  
 405. *Rubia tinctorium* L.  
 406. *Rumex confertus* Willd.  
 407. *Rumex crispus* L.  
 408. *Rumex dentatus* L.  
 409. *Rumex obtusifolius* L.  
 410. *Ruscus hypoglossum* L.  
 411. *Ruta graveolens* L.  
 412. *Saccarum officinarum* L.  
 413. *Salix babylonica* L.  
 414. *Salix safsaf* L.  
 415. *Salix tetrasperma* Roxb.  
 416. *Salvadora persica* L.  
 417. *Salvia aegyptiaca* L.  
 418. *Salvia farenaceae* Benth.  
 419. *Salvia lanigera* Poir.  
 420. *Salvia officinalis* L.  
 421. *Salvia triloba* L.  
 422. *Salvia verbenaca* L.  
 423. *Sambucus nigra* L.

424. *Sansevieria cylindrica* Bojer.  
 425. *Santolina chamaecyparissus* L.  
 426. *Saponaria officinalis* L.  
 427. *Schinus molle* L.  
 428. *Schinus terebinthifolius* Radd.  
 429. *Scrozonera alexandrina* Boiss.  
 430. *Scrophularia desertii* Del.  
 431. *Securinega suffruticesa* Rehd.  
 432. *Senecio coronopifolius* Desf.  
 433. *Senecio desfontainei* Druce  
 434. *Senecio vulgaris* L.  
 435. *Sequoia sempervirens* Endl.  
 436. *Sesbania aegyptiaca* Pers.  
 437. *Silene succulenta* Forssk.  
 438. *Silene villosa* Forssk.  
 439. *Solenostemma argel* (Del.) Hayne  
 440. *Solanum aviculare* Forst.  
 441. *Solanum laciniatum* Ait.  
 442. *Solanum macranthum* Dun.  
 443. *Solanum macrocarpum* Pers.  
 444. *Solanum melongena* L.  
 445. *Solanum nigrum* L.  
 446. *Solanum oleraceum* L.  
 447. *Solanum pseudocapsicum* L.  
 448. *Solanum sodomium* L.  
 449. *Sonchus macrocarpus* Boulos & Jeffrey  
 450. *Sophora flavexens* Ait.  
 451. *Sophora japonica* L.  
 452. *Sophora secundiflora* Ortega  
 453. *Sterculia diversifolia* Don  
 454. *Sylibum marianum* (L.) Gaertn.  
 455. *Tabebuia guayacan* Hemsl.  
 456. *Tabebuia pentaphylla* (L.) Hemsl.  
 457. *Tabernaemontana coronaria* Willd.  
 458. *Tabebuia chrysotricha* (Mart. ex DC.) Standl.  
 459. *Tabebuia argentea* (Bur. & Schum.) Britt.  
 460. *Tagetes erecta* L.  
 461. *Tanacetum santolinoides* (DC.) Feinbr.  
 462. *Tecoma stans* (L.) HBK  
 463. *Terminalia chebula* Retz.  
 464. *Teucrium polium* L.  
 465. *Thea sinensis* L.  
 466. *Thymelea hirsuta* L.  
 467. *Thymus bovei* Benth.  
 468. *Thymus capitatus* (L.) Hoffm. & Link  
 469. *Tithonia diversifolia* Gray  
 470. *Tradescantia bracteata* Small  
 471. *Tribulus alatus* L.  
 472. *Trifolium alexandrinum* L.  
 473. *Trigonella foenum-graecum* L.  
 474. *Trigonella maritima* Del.  
 475. *Trigonella stellata* Forssk.  
 476. *Urginea maritima* L.  
 477. *Urginea maritima* var. *pancratium* (Steinh.) Bak.  
 478. *Urospermum picroides* L.  
 479. *Valeriana officinalis* L.  
 480. *Varthemia montanas* (Vahl.) Boiss.  
 481. *Verbena officinalis* L.  
 482. *Vernonia amygdalina* Del.  
 483. *Vicia calcarata* Desf.  
 484. *Vicia faba* L.  
 485. *Vicia sativa* L.  
 486. *Vinca rosea* L.  
 487. *Vitex agnus-castus* L.  
 488. *Withania somnifera* L.  
 489. *Wrightia coccinea* Sims.  
 490. *Xanthium occidentale* Bert.  
 491. *Xanthium pungens* Wahl.  
 492. *Xanthium spinosum* L.  
 493. *Xylopiia aethiopica* A. Rich.  
 494. *Zilla spinosa* (Turra) Prantl  
 495. *Ziziphus spina-christi* L.  
 496. *Zygophyllum album* L.  
 497. *Zygophyllum coccineum* L.  
 498. *Zygophyllum decumbens* Del.