COMPILATION OF SELECTED HARBAL DRUGS

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NIRALI PRAKASHAN
ADVANCEMENT OF KNOWLEDGE

COMPILATION OF SELECTED HERBAL DRUGS

(For Degree Course in Pharmacy)

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Preface

It gives us great pleasure to present a book of **"Compilation of Selected Herbal Drugs"**.

Many more new products are being launched daily to the market for day-to-day consumption.

Neutraceuticals, House hold remedies, Cosmetics products (like medicated oils, beauty soaps, shaving creams, tooth powders etc.) and use of herbal drugs in almost all is very common now-a-days.

But the consumers are afraid of undesired reactions like allergies and side effects of synthetic chemicals or bases used in the formulations and therefore herbal drugs are preferred since these are relatively safe.

We are sure, the information provided in the text will enrich the knowledge of users in respect of Ayurvedic formulations, Cosmetics, Homeopathic medicines and Patented house hold remedies, where so ever herbal drugs are used.

Additionally this will also provide enough information to students of pharmacy courses for all competitive examinations.

Readers are requested to note the abbreviations used along with their long forms are as under:

FOM : Foreign Organic Matter

Sp. gr. : Specific Gravity

LOD : Loss On Drying

AIA : Acid Insoluble Ash

ASE : Alcohol Soluble Extractives

WSE : Water Soluble Extractives

We express our sincere thanks to Shri. Dineshbhai Furia and Shri. Jignesh Furia of Nirali Prakashan for taking keen interest in the publication of this book.

I also thanks to Prachi Sawant, Roshan Shaikh and entire staff brining out the book on time.

December 2016 **Authors**

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COMPILATION OF SELECTED HERBAL DRUGS

ACACIA

Synonyms

Gum acacia, Gum arabica, Indian gum.

Biological Source

Indian gum is the dried gummy exudation obtained from the stem and branches of *wild Acacia arabica* belonging to family Leguminosae.

Chemical Constituents

It consists principally of arabin, which is a complex mixture of calcium, magnesium and potassium salts of Arabic acid. Arabic acid on hydrolysis gives L-arabinose, L-rhamnose, D-galactose and D-glucuronic acid. It also contains an enzyme oxidase and peroxidase.

Standards of Quality

Ash	:	Not more than 5.0 per cent
Sulphated ash	:	Not more than 5.0 per cent
Acid-insoluble ash	:	Not more than 1.0 per cent
Loss on Drying	:	Not less than 15.0 per cent

Uses

Acacia is a demulcent. It is also administered intravenously in haemolysis. In the form of mucilage, it is used as a suspending agent, specifically in mixtures with resinous substance. Acacia is a good emulsifying agent for fixed oils, volatile oils and also for liquid paraffin. It is a good binding agent and is used in the preparation of lozenges, pastilles and compressed tablets. It is a gum of choice, as it is compatible with other plant hydrocolloids, as well as, starches and carbohydrates. In combination with gelatin, it is used to form coacervates for microencapsulation of drugs.

ACONITE

Synonyms

Aconite root, Bachnag, Monks hood.

Biological Source

It is the dried root of *Aconitum napellus* Linn belonging to family Ranunculaceae. It should contain not less than 0.6 per cent of alkaloids of aconite, of which not less than 30 per cent should be aconitine.

Chemical Constituents

Aconite contains diterpene alkaloids like aconitine, hypoaconitine, neopelline, napelline, neoline and traces of sparteine and ephedrine. Among them only aconitine is the most important,

having poisonous action. The chief constituent of drug is aconitine and is ether-soluble. The ether-soluble alkaloids vary in different species of aconite. The drug also contains aconitic acid, succinic acid and starch.

Standards of Quality

Ash	:	Not more than 5 per cent
Acid-insoluble ash	:	Not more than 1 per cent
Aerial stem	:	Not more than 5 per cent
Foreign organic matter	:	Not more than 2 per cent

Uses

It is a highly **poisonous** drug. It is used externally (in the form of liniment) in the treatment of neuralgia, sciatica, rheumatism and inflammation. It is also analgesic and cardiac depressant. Now-a-days, its use is restricted only to homeopathic medicines.

ACORUS

Synonyms

Calamus, Bach, Ghoda Vaj, Vaj, Sweet flag.

Biological Source

These are the dried rhizomes of the plant known as *Acorus calamus* Linn, belonging to family Araceae. It contains not less than 1.5 per cent of volatile oil.

Chemical Constituents

The drug contains 1.5 - 3.5 per cent of volatile oil, starch, resin (2.5 per cent) and tannin (1.5 per cent). Volatile oil contains asaraldehyde. The other contents of the oil are asarone and eugenol. Calamus also contains a bitter amorphous principle known as acorine. The oil from North American race is devoid of asarone, whereas, European race contains about 10 per cent asarone.

Standards of Quality

FOM	:	Not more than 1.0 per cent
Ash	:	Not more than 6.0 per cent
Alcohol soluble extractives	:	Not less than 20.0 per cent

Uses

Calamus is used as carminative, bitter stimulant and vermifuge. Volatile oil is used in perfumery, as insect-repellant and for flavouring gin, beer and other beverages etc. It is also used for preservation of food grains. Asarone has sedative and tranquillising properties. In India, the drug is also used in epilepsy and depression.

AJOWAN

Synonyms

Carum copticum Hieren, Bishop's weed, Ajwain.

Biological Source

Ajowan consists of dried ripe fruits of the plant *Trychyspermum ammi* Sprague (Umbelliferae). It contains not less than 1.0 per cent (w/w) of thymol on dried basis.

Chemical Constituents

Ajowan fruits contain 2 - 4 per cent of volatile oil, about 21 per cent fat, 17 per cent proteins and 25 per cent carbohydrates. Traces of tannin, glycoside and steroidal substances have been reported. Volatile oil mainly contains thymol (35 - 60 per cent), p-cymene (50 - 55 per cent), terpinene (30 - 35 per cent). Pinene, dipentenes, etc. are other constituents of the oil. The flavour and taste of drug is due to thymol and volatile oil.

Standards of Quality

Foreign organic matter	:	Not more than 2.0 per cent
LOD	:	Not more than 10.0 per cent
Ash	:	Not more than 15.0 per cent
Acid-insoluble ash	:	Not more than 7.0 per cent
ASE	:	Not less than 2.0 per cent
WSE	:	Not less than 15 per cent

Uses

Ajowan is used as antispasmodic, stimulant and carminative. It is also recommended in sore throat and bronchitis. Ajowan is used in preparation of lotions and ointments for checking chronic discharge.

Ajowan oil and dethymolised ajowan oil is used as antiseptic, antifungal, insecticide and anthelmintic. The oil is also preferred as deodarant in mouth washes, tooth pastes and gargles and as a flavouring agent for disinfectant soaps.

ALOES

Synonyms

Aloe, Musabbar, Kumari.

Biological Source

Aloes is the dried juice of the leaves of *AIoe barbadensis* Miller, known as Curacao aloes; or of *Aloe perryi* Baker, known as Socotrine aloes; or of *Aloe ferox* Miller and hybrids of this species with *Aloe africana* Miller and *Aloe spicata* Baker, known as Cape aloes, belonging to family Liliaceae.

Chemical Constituents

All the varieties of aloe are the major sources of anthraquinone glycosides. The principal active composition of aloe is aloin, which is a mixture of glucosides, among which barbaloin is the chief constituent. It is chemically aloe-emodin anthrone C - 10 glucoside and it is water soluble.

Barbaloin is a C-glycoside and it is not hydrolysed by heating with dilute acids or alkalis. Ferric chloride decomposes barbaloin by oxidative hydrolysis into aloe-emodin-anthrone, little aloe-emodin and glucose.

Along with barbaloin, aloes also contains isobarbaloin, β–barbaloin, aloe-emodin and resins.

The drug also contains aloetic acid, homonataloin, aloesone, chrysophanic acid, chrysamminic acid, galactouronic acid, choline, choline salicylate, saponins, mucopolysaccharides, glucosamines, hexuronic acid, coniferyl alcohol, etc.

The resin of aloe principally contains Aloesin. It is a type of a C-glucosyl chromome.

Aloesin is also responsible for purgative action of aloes.

Standards of Quality

Loss on drying	:	Not more than 10.0 per cent
Ash contents	:	Not more than 10.0 per cent
Acid insoluble ash	:	Not more than 5.0 per cent
Alcohol soluble extractives	:	Not less than 10.0 per cent
Water soluble extractives	:	Not less than 50.0 per cent

Uses

Aloes is used as a purgative. Its effect is mainly on colon. It has a stronger purgative action in the series of all crude drugs with anthracene glycosidal content. To counter effect the gripping action, it is given with carminatives.

Aloin is preferred now-a-days to aloes, both of which are official. Besides purgative property, aloes enjoys many other uses. It is an ingredient of compound tincture of benzoin (Friar's balsam).

Aloe gel, formed in inner parenchymal cells of the leaf, is a slightly viscous and clear liquid. During collection, it should not get contaminated with aloe juice. Such gel is used in topical therapeutic applications and also in many cosmetic products, but the therapeutic value, if taken orally, is questionable. The gel possesses good moisturizing properties and also has formulation role for oil in water (**approved by U.S.F.D.A.**) preparation. It shows anti-inflammatory properties due to the chemical contents like salicylates, carboxypeptidases (inactivating bradykinen) and magnesium lactate (interfering with the conversion of histidine to histamine in the mast cells). The polysaccharide and sugar content have the role for hydrocolloid dressing and also osmotic bactericides. Aloe gel also increases the removal of dead tissue due to its Aloctine, A content which stimulates macrophage production. It is believed that only fresh gel probably has a role in treatment of burns and wounds. It is also used in the treatment of pains and itchings and also to slow down ulceration and keratosis.

Aloe gel is used in skin cosmetics as a protective due to its antiwrinkle properties. Aloe is also used externally for painful inflammation.

AMLA

Synonyms

Emblica, Indian goose berry, Amalki.

Biological Source

This consists of dried, as well as fresh fruits of the plant *Emblica officinalis* Gaerth *Phyllanthus emblica* Linn. belonging to family *Euphorbiaceae*. It contains not less than 1.0 per cent w/w of gallic acid calculated on dry basis.

Chemical Constituents

Amla fruit is a rich natural source of vitamin C (Ascorbic acid) and contains 600 - 750 mg per 100 g of the fresh pulp. Furthermore, fruits also contain about 0.5 per cent fat, phyllemblin and 5 per cent tannin. Amla fruits are also rich in mineral matters like phosphorus, iron and calcium. It contains appreciable amount of pectin. It is found that vitamin content of dried fruits is not lost considerably. It may be due to the presence of tannins, which retards oxidation of vitamin C.

Standards of Quality

FOM	:	Not more than 3.0 per cent
Ash	:	Not more than 5.0 per cent
Acid-insoluble ash	:	Not more than 2.0 per cent
Alcohol soluble extractives	:	Not more than 40.0 per cent
WSE	:	Not less than 40.0 per cent

Uses

Amla fruits are largely used in Indian medicines. It is used as an acrid, diuretic, refrigerant and laxative. Dried fruits are given in diarrhoea and dysentery. They are also administered in jaundice, dyspepsia and anaemia along with iron compound. Fruits are also used in preparation of inks, hair oils and shampoo. It is reported that fixed oil from fruits possesses the property of promoting hair growth. Seeds of the fruits are given in treatment of asthma and bronchitis. The leaves are used as fodder. Alcoholic extract of the fruit is anti-viral. It is a popular ingredient of '*Triphala*' and '*Chyawanprash*''. Amla, being a rich source of vitamin C, is considered important to slow the ageing process. It improves skin health. Ageing is a cumulative result of damage to various cells and tissues, mainly by oxygen free radicals. Vitamin C is a scavenger of free radicals which breaks them down. It has an antioxidant synergism with vitamin E (which prevents peroxidation of lipids). Amla is a major ingredient of ancient Ayurvedic preparation Chyawanprash, believed to delay ageing process thereby adding to longevity.

AMRA BARK

Synonym

Aam ka chhal.

Biological Source

It consists of dried stem bark of *Mangifera indica* Linn. *family:* Anacardiaceae, a tree found wild or cultivated throughout the country. It contains not less than 1.5 per cent of mangiferin on dried basis.

Chemical Constituents

Mango bark contains 10-20 per cent tannins, namely protocatechuic acid and catechin. Additionally it also contains mangiferin, alanine, glycine, aminobutyric acid, kinic acid and Shikimic acid. Mangiferin is a polyphenolic compound and is an antimicrobial, analgesic and antioxidant.

Standards of Quality

Foreign organic matter	:	Not more than 2 per cent
Ash	:	Not more than 9 per cent
Acid-insoluble ash	:	Not more than 2 per cent
Alcohol-soluble extractives	:	Not less than 20 per cent
Water-soluble extractives	:	Not less than 14 per cent

Uses

Amra-bark is used as an astringent, antioxidant and also in the treatment of diarrhoea, dysentery and rheumatism. Fruits are edible, sweet, delicious and rich source of nutrients. Fixed oil obtained from mango-stone is valuable industrially.

ANANTMUL

Synonyms

Anantmool, Sariva, Indian Sarsaparilla.

Biological Source

It consists of dried roots of the plant known as *Hemidesmes indicus* Linn. belonging to family Asclepladaceae. The roots contain not less than 0.020 per cent of Iso-vanillin evaluated on dry basis.

Standards of Quality

Foreign organic matter	:	Not more than 2.0 per cent
Alcohol soluble extractives	:	Not less than 8.0 per cent
Water soluble extractives	:	Not less than 12.0 per cent
Ash contents	:	Not more than 15.0 per cent
Acid insoluble ash	:	Not less than 2.0 per cent
Loss on drying	:	Not less than 12.0 per cent by using 5 gm in an oven at 105ºC.

Chemical Constituents

Roots contain about 0.2 per cent volatile oil, β sitosterol, a & b amyrins, lupeol, tannins, and saponins. Sarsasapogenin contains three glucose and one rhamnose as sugar components.

Volatile oil containing p-methoxy salicylic aldehyde as major constituent. Roots contain coumarino-lignoids, hemidesminine and hemidesmin I. Iso-vanilline is the main constitutent responsible for pleasant flavour of the drug.

Uses

Syrup of the root is used as flavouring agent and in preparation of herbal tea. It is also used as blood purifier, in rheumatism, anti-inflammatory tonic in urinary disorders. Powdered roots are used for pre and post natal care, and to increase lactation in cows. It is used in psoriasis and also as flavour in beverages.

ASAFOETIDA

Synonyms

Asafoetida, Gum Asafoetida, Devil's dung.

Biological Source

Asafoetida is the oleo-gum resin obtained by incision from the rhizomes and roots of *Ferula foetida* Regel, *Ferula rubricaulis* Regel and other species of *Ferula*, belonging to family Umbelliferae.

It contains not less than 0.10 per cent of Trans Fernlic acids calculated on dry basis.

Chemical Constituents

Asafoetida contains resin (40 - 65 per cent), gum (20 - 25 per cent), and volatile oil (4 - 20 per cent). The resin of the drug consists chiefly asaresinotannol in the free or combined form with ferulic acid. Free umbelliferone is absent in the drug (distinction from galbanum). Ferulic acid on treatment with hydrochloric acid is converted into umbellic acid, which looses water to form umbelliferone. Oil of asafoetida is obtained by steam distillation of the oleo-gum resin. The chief constituent of the oil is secondary butyl propanyl disulphide. Other constituents of oil are di and trisulphides, pinene and other terpenes. The specific odour of the drug is due to sulphur compounds.

Standards of Quality

Foreign organic matter	:	⩾ 02.0%
Alcohol soluble extractives	:	⩽ 12.0%
Water soluble extractives	:	⩽ 15.0%
Ash	:	⩾ 10.0%
Acid insoluble ash	:	⩾ 02.0%
Loss on Drying	:	⩾ 10.0%

Uses

It is used as carminative, nervine stimulant, or in intestinal flatulence, as flavouring agent for curries, sauces and pickles and in veterinary medicine.

ASHOKA

Synonyms

Ashoka, Ashoka bark.

Biological Source

Ashoka consists of dried stem bark of the plant *Saraca indica* Linn. belonging to family Leguminosae.

Chemical Constituents

Ashoka contains about 6 per cent tannin, haematoxylin, ketosterol, saponin and organic calcium and iron compounds. The tannins are found to be of condensed type. The ketosterol seems to be androgenic in nature. Leucopelargonidin and leucocyanidin have been isolated from the ashoka bark. The activity of drug is due to the presence of steroidal component and the calcium salt. Bark contain powerful oxytocic principle, a phenolic glycoside P_2.

Standards of Quality

FOM	:	Not less than 2 per cent
Ash	:	Not more than 11.0 per cent
Alcohol soluble extractives	:	Not less than 15.5 per cent
WSE	:	Not less than 11.5 per cent

Uses

It is used as a uterine tonic and a sedative. It stimulates the uterus by the prolonged and frequent uterine contractions. It is also suggested in all cases of uterine bleeding, where ergot can also be used. It is reported to have a stimulant effect on the endometrial and ovarian tissue and useful in menorrhagia.

ASHWAGANDHA

Synonyms

Withania root, Asgandh, Winter cherry.

Biological Source

It consists of dried roots and stem bases of *Withania somnifera* (Linn.) Dunal, belonging to family Solanaceae and should contain not less than 0.02 per cent of total withanolide A and withaferin A on dried basis.

Chemical Constituents

The main constituents of ashwagandha are alkaloids and steroidal lactones. Among the various alkaloids, withanine is the main constituent. The other alkaloids are somniferine, somnine, somniferinine, withananine, pseudo-withanine, tropine, pseudo tropine, 3-α-gloyloxytropane, choline, cuscohygrine, isopelletierine, anaferine and anahydrine. Two acyl steryl glucosides viz. Sitoindoside VII and sitoindoside VIII have been isolated from roots.

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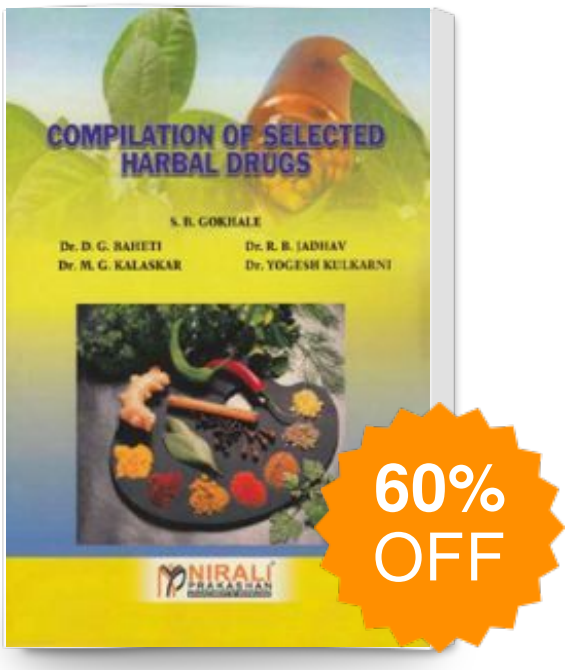

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