

Classification of Natural Products :

The most important natural sources of drugs are (higher plants , microbes & animals and marine organisms) . Some useful products are obtained from minerals that are both organic and inorganic in nature .

drugs are classified in the following different ways :

- 1- Alphabetical classification .
- 2- Morphological classification
- 3- Taxonomic classification
- 4- Pharmacological classification
- 5- Chemical classification
- 6- Chemo - taxonomical classification

1- Alphabetical Classification : حسب الترتيب الابجدي

Crude drugs are arranged in alphabetical order either in Latin or English names (Common names) or sometimes local .

Some of the pharmacopoeias , dictionaries and reference books which classify crude drugs according to this system are as follows :

- 1- Indian Pharmacopoeia (IP).
- 2- British Pharmacopoeia(BP)
- 3- British Herbal Pharmacopoeia(BHP)
- 4- United States Pharmacopoeia & National Formulary(USP,(NP)
- 5- British pharmaceutical Codex (BPI)
- 6- European Pharmacopoeia(UP)

Examples:

Amla	Ipecac	Rauwolfia
Bael	Jalap	Scilla
Catechu	Kalmegh	Senna
Datura	Lemon peel	Tobacco
Eucalyptus	Methi	Urgenia
Ergot	Nutmeg	Vasaka
Fennel	Orange peel	Withania
Gokhru	Picrorrhiza	Yeast
Honey	Quassia wood	

Note: eucalyptus: اليوكالبتوس , fennel: نبات الشمر , nutmeg: جوز الطيب , picrorrhiza: الجذور المرة , honey: العسل , peel: قشر , tobacco: التبغ .

2- Morphological Classification: اعتمادا على الشكل المستخدم

In this type of classification of crude drugs are arranged according to the part of plant used as drug (for example leaves, fruits, flowers, bark لحاء الشجر, etc.). When a drug represents a part of the plant, it is known as organized drug but when a drug does not represents part of plant, it is known as an unorganized drug.

- Classification of organized drugs: have a specific part used: fruit, seed, root
- Classification of unorganized drugs: have a nonspecific part used: juice, extract, wax

a. Classification of organized drugs.

S. No.	Part of plant	Drugs
1	Bark	Cinchona, cinnamon, cassia, cascara, kurchi, Quillaia.
2	Rhizomes	Rhubarb, valerian, podophyllum, liquorices, turmeric, ginger, acorus,
3	Root	Ipecac, Rauwolfia, senega, gentian, aconite.
4	Leaves	Senna, Datura, Belladonna, digitalis, eucalyptus, scilla, coca, Vasaka
5	Flowers	Rose, clove, saffron
6	Fruits	Bael, fennel, Gokhru, capsicum, cardamom, dill
7	Seeds	Almond, nux-vomica, nutmeg, castor, Plantago, Bavchi, mustard
8	Entire plants	Ergot, Ephedra, chirata, Shankhpuspi, lobelia, benafsha
9	Hairs and fibres	Cotton, hemp, jute, wool

b. Classification of unorganized drugs

S. No.	Category	Drugs
1	Extracts	Agar, Gelatin
2	Fixed oils	Castor oil, Arachis oil, olive oil,
3	Fat	Lard
4	Gums	Acacia, Tragacanth
5	Gum resin	Myrrh, asafetida

6	Juice	Aloe
7	Latex	Opium
8	Resins	Benzoin, colophony , Asafoetida,
9	Waxes	Beeswax, wool fat
10	Oleoresins	Balsam of tolu, balsam of peru

Rhizomes جذور, bark لحاء الشجر, root جذور, cinchona شجر الكينايا, cinnamon القرفة, cassia قرفة زنجبيل, ginger الكركم, turmeric زنجبيل, valerian الناردين, liquorice عرق السوس, rhubarb الراوند, acorus قصب الذرّة, clove القرنفل, saffron الزعفران, capsicum الفلفل, cardamom الهيل, dill شبت, almond اللوز, nux-vomica جوز القيء, nutmeg جوز الطيب, castor الخروع, mustard خردل, hemp قنب, lard شحم الخنزير, acacia صمغ, aloe صبار,

3- Taxonomical Classification :

Taxonomical classification is a botanical نباتي classification , It is based on class of **drug or phylogenetic** التطور والنشوء similarities of plants. In this system crude drugs are arranged in a group according to their **division, class, order, family, genus and species.** This system gives in detail an ideal about the whole plant but it is not significant because in most of the cases only one part of plant is used as drug. The whole plant is rarely used as drug.

Taxonomical classifications of crude drugs

S. N.	Drug	Division	Class	Order	Family	Genus	Species
1	Senna	Angiosperm	Dicotyledone	Rosales	Leguminosae	Cassia	Angustifolia
2	Fennel	Angiosperm	Dicotyledone	Umbelliflorae	Umbelliferae	Foeniculum	Vulgare
3	Nux vomica	Angiosperm	Dicotyledone	Gentianales	Loganiaceae	Strychnos	Nux-vomica
4	Scilla	Angiosperm	Monocotyledons	Liliflorae	Liliaceae	Urginea	Maritima
5	Vanilla	Angiosperm	Monocotyledons	Microspermae	Orchidaceae	Vanilla	Planifolia
6	Ephedra	Gymnosperm	-----	Genetales	Ephedraceae	Ephedra	Equisetina

Angiosperm ثنائي الاوراق, dicotyledone ثنائي الاوراق, gymnosperm عارية البذور, gymnosperm مغطاة البذور

4-Pharmacological Classification :

In this system grouping of drug according to their **pharmacological action or of most important constituent or their therapeutic use.** This classification is more relevant ذو صلة بالعقاقير and is mostly followed method . Drugs like digitalis , squill بصل and strophanthus having cardiotoxic مقوي للقلب action are grouped together.

S. No.	Pharmacological action	Drugs
1	Anticancer	Vinca, Taxus, podophyllum
2	Antimalarial	Cinchona, Artemisia
3	Antiasmatic	Ephedra, lobelia
4	Anti-inflammatory	Colchicum seed, Turmeric
5	Antispasmodic	Datura, hyocyamus
6	Antiamoebic	Kurchi, ipecac
7	Anthelmintic	Quassia, male-fern
8	Astringent	Myrobalan, Ashoka bark
9	Purgative	Senna, aloe, rhubarb
10	Carminative	Coriander, fennel, caraway, cinnamon
11	Narcotic analgesic	Poppy
12	Expectorant	Liquorices, Vasaka, balsam
13	Cardiotonic	Digitalis, Strophanthus, squill
14	Hallucinogens	Cannabis, cocaine
15	Bitter	Chirata, Gentian root
16	Tranquillizer	Rauwolfia

5 - Chemical classification :

The crude drugs are divided into different groups according to the **chemical structure** of their most important constituent . Since the pharmacological activity and therapeutic significance of crude chemical classification of drugs is dependent upon the grouping of drugs with identical constituents . An out of this classification is as follow :

CHEMICAL CLASSIFICATION OF CRUDE DRUGS

S. No.	Chemical constituents	Drugs
1	Alkaloids <ul style="list-style-type: none"> • Amine • Tropane • Quinoline • Isoquinoline • Pyridine and Piperidine • Indole • Purine 	Colchicum, Ephedra Belladonna, Datura Cinchona Ipecac, Opium Areca, Nicotiana Rauwolfia, Vinca, Nux-vomica, Ergot Tea, Coffee
2	Carbohydrate <ul style="list-style-type: none"> • Gum • Mucilage 	Acacia, Tragacanth Ispaghula
3	Glycoside <ul style="list-style-type: none"> • Anthraquinone • Saponin • Isothiocyanide • Cyanophore • Lactone • Aldehyde • Cardiac glycoside 	Senna, Aloe, Rhubarb Dioscorea, Liquorise Mustard Wild cherry bark Cantheride insect Vanilla Digitalis, Squill
4	Lipid <ul style="list-style-type: none"> • Fixed oil • Fat • Wax 	Castor oil, Cotton seed oil, Almond oil Theobroma, Lanolin Bees wax, Spermaceti
5	Proteins	Gelatin
6	Resin <ul style="list-style-type: none"> • Resin • Oleoresin • Oleo-gum resin 	Cannabis, Podophyllum Capsicum, Ginger Asafoetida, Benzoin, Myrrh
7	Volatile oils	Cardamom, Cinnamon, Clove, Fennel, Mentha, Orange peel, coriander, caraway
8	Tannins	Catechu, Ashoka bark, Myrobalan and Behra

6- Chemotaxonomic Classification :

This system of classification relies on the chemical similarity of taxon i.e. it is based on the **existence of relationship between constituents in various plants**(chemical structure similarity) It is the latest system of classification and gives more scope for understanding the relationship between chemical constituents .eg:volatile oils are mostly found in rutaceae العائلة الراثة family , tropan alkaloid are mostly found in solanaceae العائلة الباذنجانية family

Sandalwood خشب الصندل, Spearmint نعناع, Cassia القرفة, Clove القرنفل, Saffron زعفران, Chamomile بابونج, Anise يانسون, Bitter orange peel قشر الهيل, Cardamom كراوية, Capsicum الفلفل, Caraway الهيل, Colocynth الحنظل, Coriander الكزبرة, Cumin كمون, Dill شبت, Fennel الشمرة, Lemon peel, Senna pod, Star anise, Tamarind التمر الهندي, Bitter almond اللوز المر, Black Mustard الخردل, Cardamom الهيل, Colchicum, Linseed بذور الكتان, Garlic الثوم, Ginger الزنجبيل, Glycyrrhiza العرق سوس, Ephedra الافدرين, Valerian نبات الناردين, Turmeric الكركم, Rhubarb الراوند, Opium الخشخاش, Flax الكتان, Silk الحرير, Datura نبات الداتورا, Hemp قنب, Beeswax شمع النحل, Spermaceti الشموع العطرية, Aloe الصبار, Acacia صمغ الشجر, Colophony المخذرات الموضعية, Mastic البستج, Coal tar قطران الفحم, Anise يانسون, Coriander كزبرة, Tar القطران, Peppermint نعناع, Rosemary اكليل الجبل, Sandalwood خشب الصندل, Cinnamon القرفة, Nutmeg جوز الهند, Camphor الكافور, Castor الخروع, Coconut جوز الهند, Cotton seed بذور القطن, Almond اللوز, Sesame السمسم, Olive اللوز, Linseed الكتان, fennel الشمرا, ginger الزنجبيل, garlic الثوم, rosemary اكليل الجبل, lavender الخزامي, styptic قابضة, astringent الصمغيات, Mucilaginous الخزامي, red raspberry توت العليق الاحمر, liquorice صبار, aloe صبار, yam root جذر اليام, pumpkin يقطين, senna, barberry الاشجار الشائكة, alfalfa نبات الفصة, asparagus نبات الهليون, thistle النباتات الشوكية, buchu نبات الهندباء, corn silk حرير الذرة, dandelion الهندباء, chaparral البلوط, grapevine نبات الكرمة.