

Pharmacognosy

Morphology of different parts of medicinal plants



Dr. Rand Shahin

References:

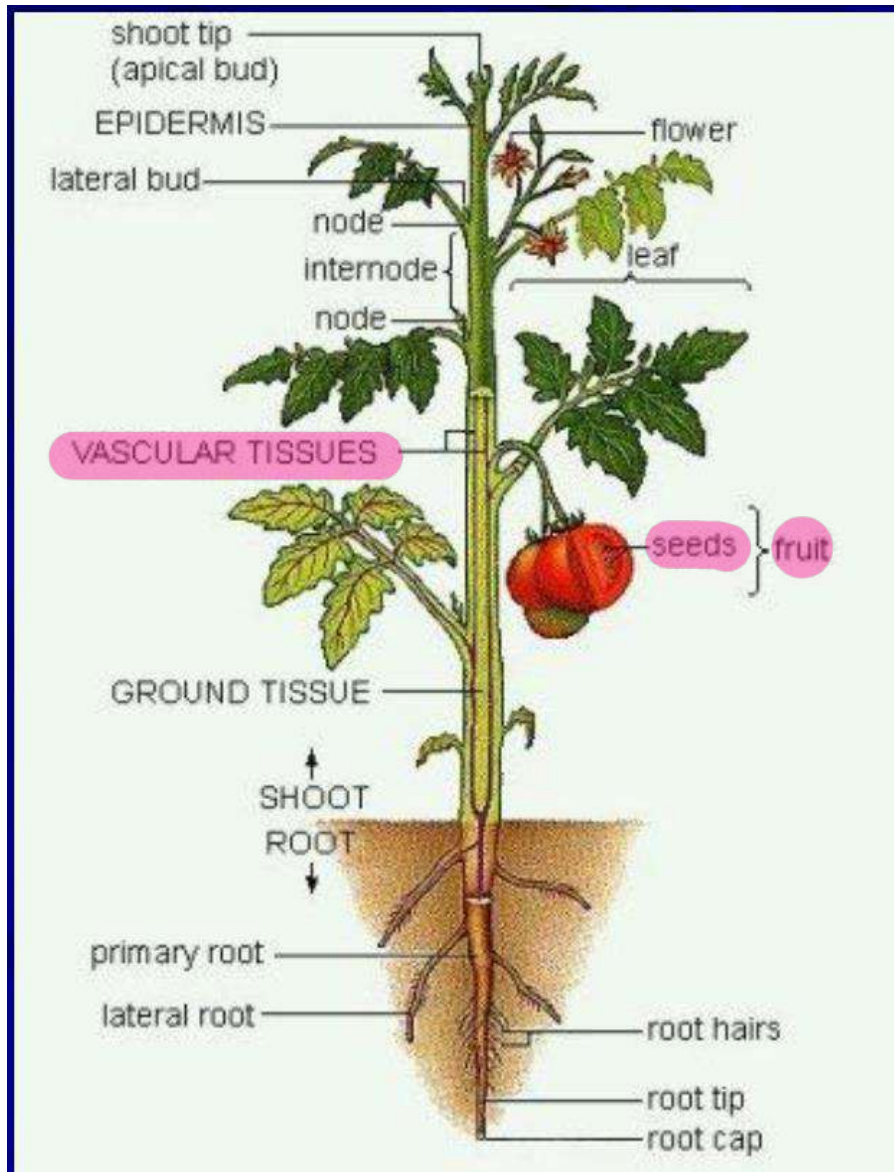
Prof. Madiha AminHassan

Prof. Talal Abu rujai

Dr. Jamila Dibbas

إعداد الطالبة: آلاء العتوم

A flowering plant



Epidermis: The epidermis consists of a single layer of cells covering the whole plant. Epidermal cells show great variety in form, giving characteristic patterns when seen in surface view (straight, wavy, beaded,... walls.

Plant tissues

- A tissue is an aggregation of cells of common source, structure and function in intimate union
- Classification of plant tissues:
- Tissues may be classified into

A. Simple plant tissue

- Those composed of one kind of cell only. E.g. parenchyma and collenchyma.

B. Complex plant tissue

- Those made up of two or more kinds of cells. E.g. xylem and phloem.

A) Leaves

- •Aloe : (الصبار) Aloe vera
- Family: Xanthorroaceae



The juice of Aloes contained in the large pericyclic cells of the leaves. When the leaf base is cut, the juice flows out and collected

Aloe is recommended for the treatment of atonic constipation and suppressed menstruation.

A) Leaves

Tea (Black/Green) الشاي

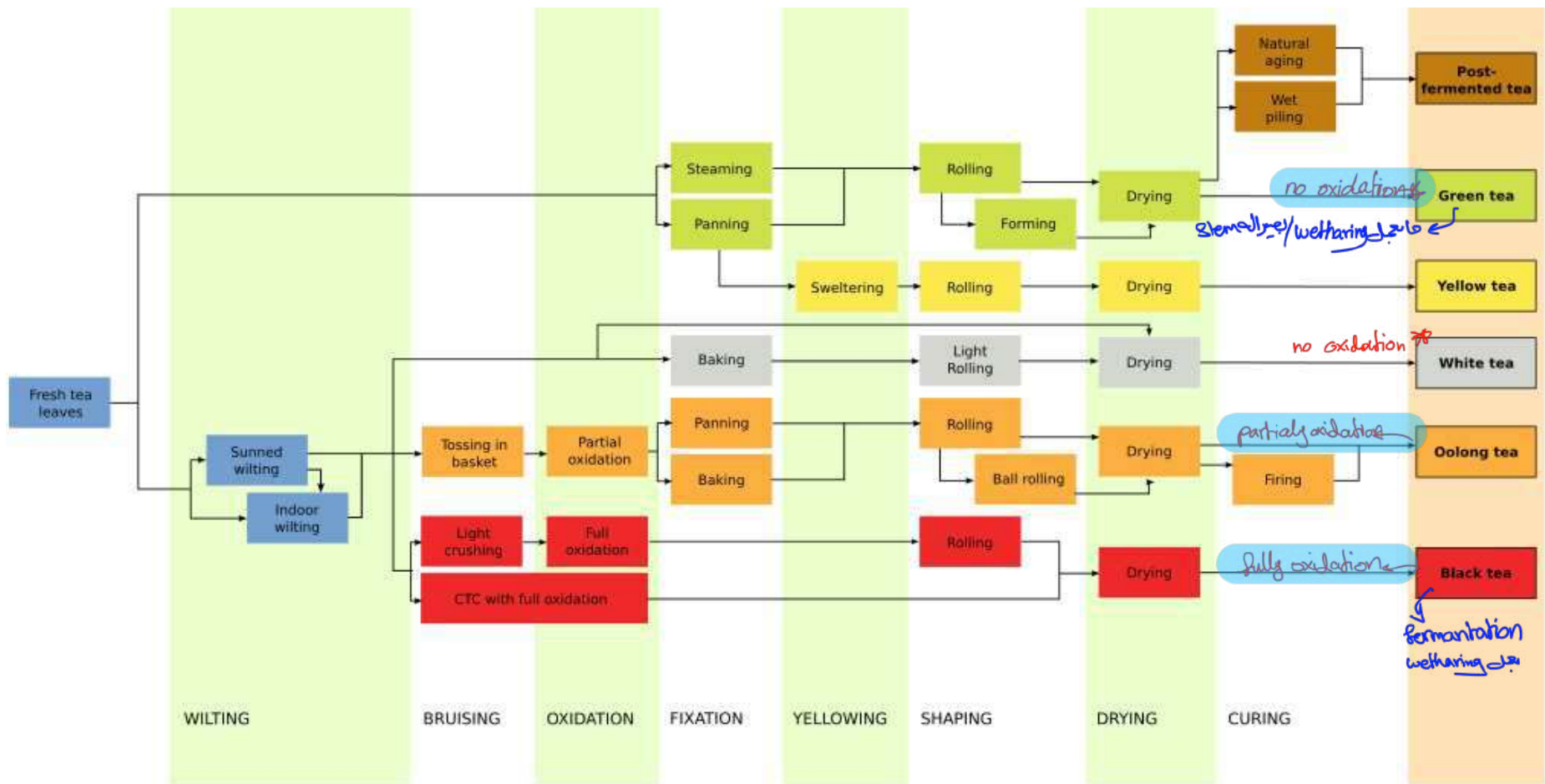
• *Camellia sinensis* F. Theaceae.

- **black tea** - fully fermented leaves that are roasted (40mg caffeine/cup).
- **green tea** - steamed, dried, non fermented leaves (20mg/cup).
- **green tea** contains higher concentrations of the active catechin constituents compared to black tea.

تحتوي
الكاتشين



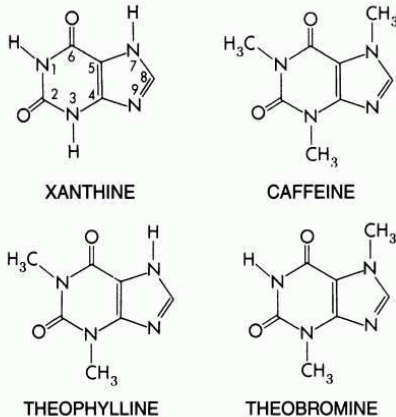
Tea preparation



A) Leaves

Tea (Black/Green) الشاي

Camellia sinensis F. Theaceae.

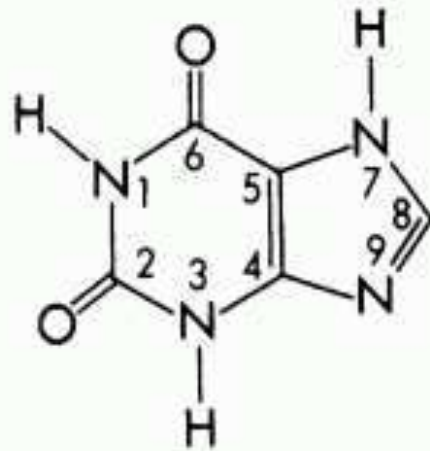


PHARMACOLOGICAL ACTIONS

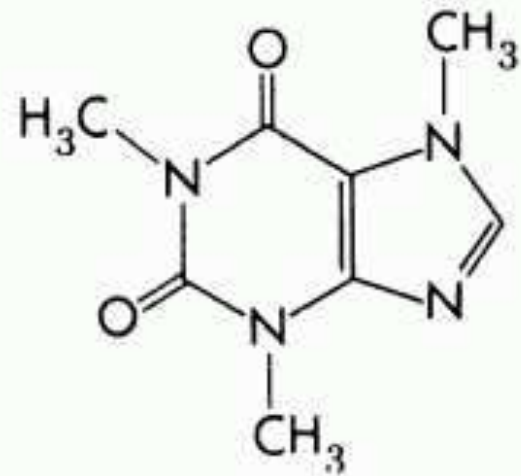
- **BLACK TEA:** Claimed to Protect against ischemic heart disease.
- **GREEN TEA:** Antioxidant capacity; decreases serum concentrations of total cholesterol, triglyceride
- Standardized Preparations: Activate thermogenesis and fat oxidation.
- Black and green tea: Increase plasma antioxidant capacity;

• Active constituents:

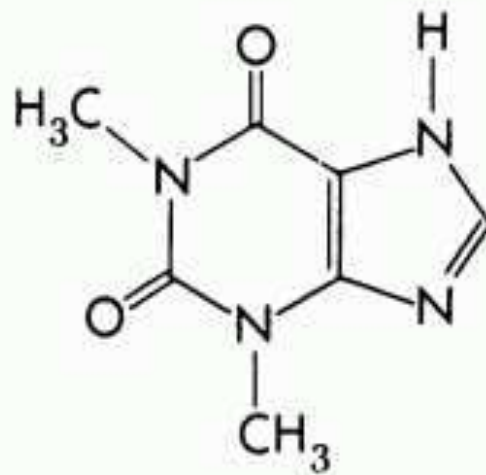
1. Polyphenols ^{*} (Tannins: Catechins) epicatechin, epigallocatechin
2. Alkaloids **purine** group (Xanthine derivatives):
 - 1) Caffeine 2-4% – CNS stimulant.
 - 2) Theophylline – bronchodilator. *eggs chocolate*
 - 3) Theobromine – diuretic.
3. ~~Inorganic Ions: fluoride (130-160 mg/kg), potassium, aluminum~~
4. ~~Other Ingredients: flavonoids, caffeic acid derivatives~~



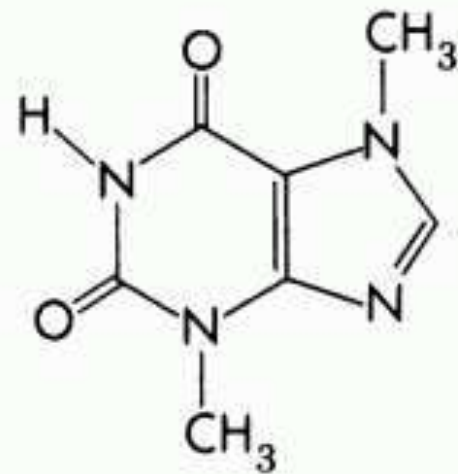
XANTHINE



CAFFEINE



THEOPHYLLINE



THEOBROMINE

Tannins

- Are astringent ^{لاذع} and bitter-tasting ^{مر} plant polyphenols that bind and precipitate proteins
- The term tannin refers to the source of tannins used in tanning animal hides into leather.
- However, the term is widely applied to any large polyphenolic compound containing sufficient hydroxyls and other suitable groups (such as carboxyls) to form strong complexes with proteins and other macromolecules. Tannins have molecular weights ranging from 500 to over 3000.

A) Leaves

Sage.

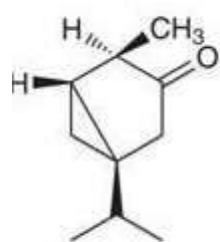


- *Salvia officinalis* L. Family: (Labiatae/Lamiaceae)

Constituents

- Acids: Phenolic – caffeic, chlorogenic, and rosmarinic.
- Flavonoids.
- Tannins
- **Volatile oil**: 1–2.8%. Major components are α - and β - thujones. Others include 1,8-cineole, borneol, camphor.

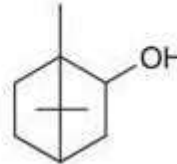
Monoterpenes



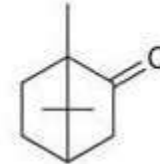
α -thujone
(-)-thujone



1,8-cineole



borneol



camphor

- **Pharmacological Actions**

1) Antispasmodic activity.

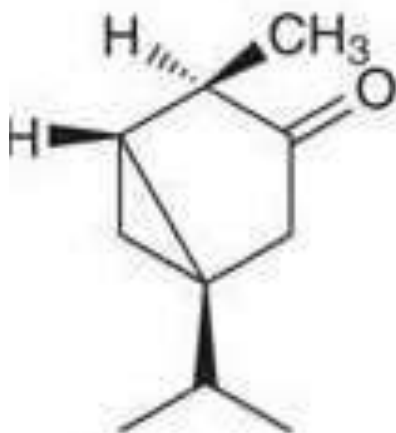
مضاد للتشنج

2) Anticholinesterase activity Early herbals claim that sage enhances the memory. The anticholinesterase activity of several Salvia species have been investigated in the search for new drugs for the treatment of **Alzheimer's disease**

3) Antimicrobial and antiviral activity. Antimicrobial activity of the volatile oil has been attributed to the **thujone content**.

Volatile oils

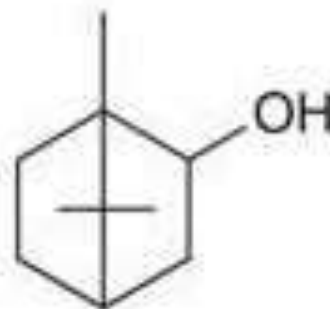
Monoterpenes



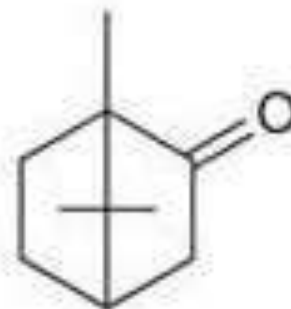
α -thujone
((-)-thujone)



1,8-cineole



borneol



camphor



Sage الميرمية



Thyme الزعتر



Bay ورق غار



Melissa المليسة



Rosemary اكليل الجبل



Marjoram مردقوش



Basil ريحان



اللبلاب

Ivy leaves



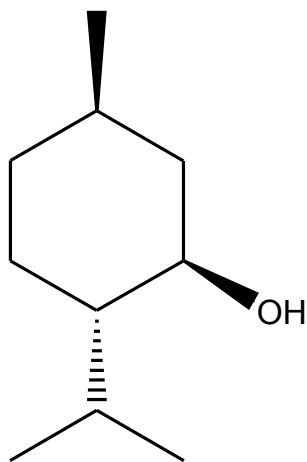
Peppermint leaf



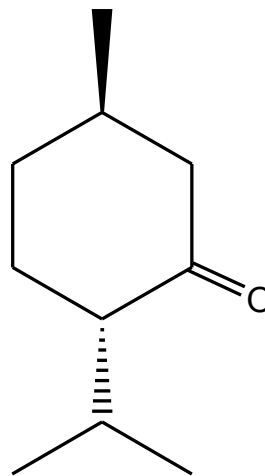
- Origin: is the dried leaves of *Mentha x piperita*:
Labiatae
- It has an initially burning taste and cool
aftertaste, especially when air is drawn in
through the mouth.

Contents

- The essential oils of the Labiatae family are synthesized in the cells of the **glandular trichomes**.
- Contains not less than 1.2 % V.O.
 - 44% **menthol** (*l*-form in nature and crystalline)
 - 15-32 % **menthone**
 - 4.5-10 % menthyl acetate esters
- 6-12 % tannins, flavonoids, triterpenes and other bitter principles



(-) Menthol



Menthone

Preparation of peppermint oil:

- Steam distillation of the fresh or dried herb to obtain a colorless to pale green liquid with a pungent odor of peppermint.

Rosemary

(*Rosmarinus officinalis*)

- Small perennial evergreen shrub
- Narrow leaves have a spicy, pine-like flavor
- ~~Not winter hardy in Illinois~~
 - Grow in pots
- Propagate from stem tip cuttings



دائمة
الحضرة

شجيرة

Rosemary (اكليل الجبل ، حصالبان)

- A silvery evergreen shrub that originated in the Mediterranean region and is now grown worldwide.
- Rosemary (*Rosmarinus officinalis*) is known both as a ^{للطبخ} culinary and healing herb.

Rosemary

- Uses:
- **Memory aid:** The herb's enduring reputation as a memory aid may in part be due to:
 - Its high concentrations of health-promoting **antioxidants**. These compounds help to protect the brain and other parts of the body against unstable oxygen molecules, called free radicals, which can damage cells in the body.
 - Rosemary may also **sharpen memory** by helping to prevent the breakdown of neurotransmitter acetylcholine.

→
Sage: Jo
(anticholinesterase)

Rosemary

- **Topical uses:**

- Rosemary oil, which is **steam-distilled** from the plant's **pale blue flowers**, may help soothe muscle sprains, strains, and arthritic joints.
معلومة *زيت اللافندر العطري* *الزيت العطري*
- The oil contains camphor, a skin irritant that can increase blood circulation to the skin when applied topically.
- The aromatic oil is frequently **added to hair preparations**: one recent trial found that rosemary oil, when combined with thyme, and lavender oils in a neutral carrier oil (jojoba) may help to lessen a type of hair loss called *alopecia areata*.
شعلة الرأس

Rosemary

- **Internal uses:**
 - - Herbalists often suggest capsules containing rosemary oil along with the essential oils of oregano and thyme for the treatment of yeast (*Candida*) overgrowth in the intestines.
 - rosemary has apparent use as antibacterial and antifungal properties.

A) Leaves: Examples

Common name	Arabic name	Binomial name	Family	Main herbal use	Major constituents
Ivy	اللبلاب	Hederae folium	Araliaceae أعم وطيفس لل ١٧٩ بم الدكتوراة ركزت عليهم	طاراد لعنه طاراد للسعال ① Expectorant ② antitussive Trarment of chronic infalmmatory bronchial diseases	①. triterpene ②. glycosides of hederagenin: hederacoside C , hederacoside D hederacoside B phenolics ✓ flavonoids, ✓ coumarins ✓



اللبلاب مهم جدا في علاج كل ما يتعلق بالجهاز التنفسي وامراض الصدر وامراض الجهاز الهضمي ، وهناك نوع من اللبلاب سام جدا عند ملامسته وهو اللبلاب ذات الاوراق الحمراء اما ذات الاوراق الخضراء فهو آمن .

Hederae folium is used for the treatment of respiratory tract diseases with intense mucous formation, respiratory tract infections and in irritating cough which stems from common cold.

هذه الفقرة لها استخدامات لل ١٧٩ بس هكت الدكتوراة الأعم هي في الفقرة :-
The major compounds responsible for the biological activity are triterpene saponins. Ivy leave extracts exhibit pasmolytic/antispasmodic, anti-inflammatory, antimicrobial, analgesic, anthelmintic, antitrypanosomal, antileishmanial, antitumor, antimutagenic, moluscocidal, antioxidant and antithrombin activities.

المركبات الرئيسية المسؤولة عن النشاط البيولوجي هي الصابونين الثلاثي. تظهر مستخلصات أوراق اللبلاب أنشطة بانولية / مضادة للتشنج، ومضادة للالتهابات، ومضادة للميكروبات، ومسكنة، ومضادة للديدان، ومضادة للبائوسومية، ومضادة للورم، ومضادة للطفرات، ومضادات الأكسدة، ومضادات الأكسدة ومضادات الترومبين

B) Flowers: Asteraceae

زعفران
Saffron
السداة stamen
يستخرج منه



Lavender



Calendula



Chamomile



من مطلق

- Explain the term, 'Hay Fever'.
- Inhalant plant allergens come in contact of the nasal and buccal mucosa during respiration. The symptom is restricted to the nasal mucosa and manifested by sneezing, lacrimation, itching and swelling of nose and eyes. This condition is known as **hay fever** or **sinusitis**.

التهاب الجيوب الأنفية



Roman

البابونج Chamomile



German

- According to **pharmacopoeia** we have **2** types of chamomile:

1. Roman chamomile: is used mainly in **Europe**,
Chamaemelum nobile

Family: (Asteraceae/Compositae).

- It has thin petals and intense at the center.

2. German chamomile: ***Matricaria chamomilla***. Family:
Asteraceae/Compositae

it has wide petals and **outspread** from the center.

- Chamomile contain a compound called matricin that **converts** during distillation it to another compound called Chamazulene (**chama**: from **chamomile**, **azue**: from **blue** color).

14°C no terpenoid (يعني من مضاعفات ال 5)

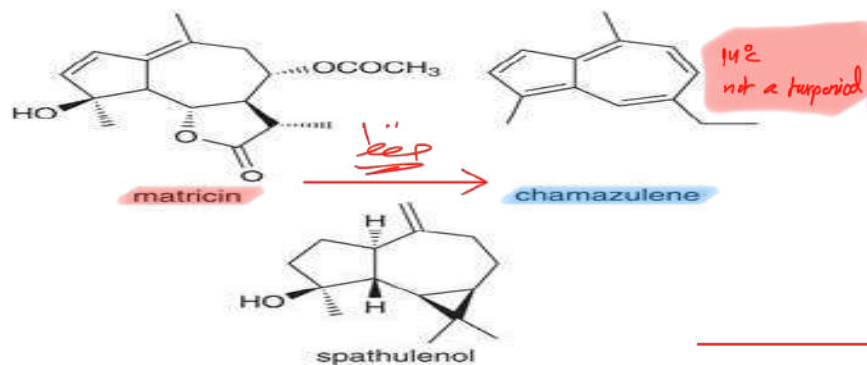
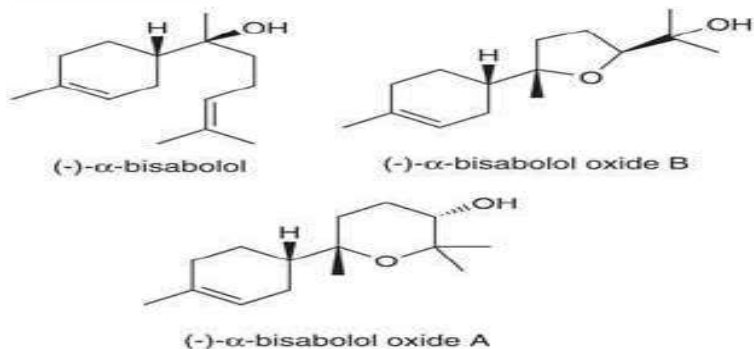
البابونج (Chamomile(German))

- Matricaria chamomilla. Family: Asteraceae/Compositae
- Part(s) Used : Flower head

Active constituents:

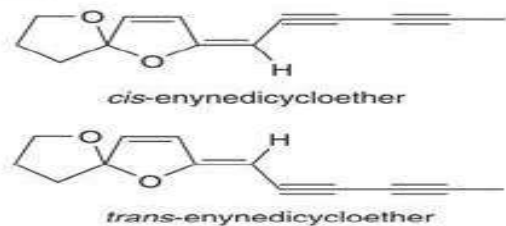
- **Coumarins**: Umbelliferone and its methyl ether, heniarin. *benzopyrone*
- **Flavonoids**: Apigenin, luteolin, quercetin, and rutin. *antitumor*
- **Volatile oils**: Pharmacopoeial standard not less than 4 mg/kg blue oil. Main components are γ -(- α -bisabolol (up to 50%) and chamazulene (blue) (1–15%). *not terpenoid* *terpenoid*
- **Other constituents**: sesquiterpenes (e.g. matricarin and matricin). *terpenoid*
- **Chamazulene** is formed from matricin during steam distillation of the oil. It varies in yield depending on the origin and age of the flowers.

Sesquiterpenes

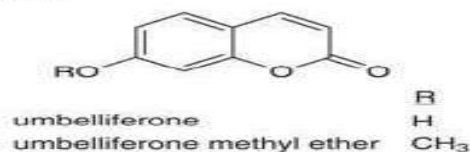


Sesquiterpenes are class of terpenes that consist of three isoprene units (15 Carbons), so we can get these compounds from many types of plant tissues, specially Asteraceae family plant tissue

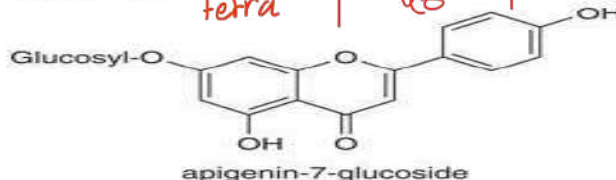
Acetylenes



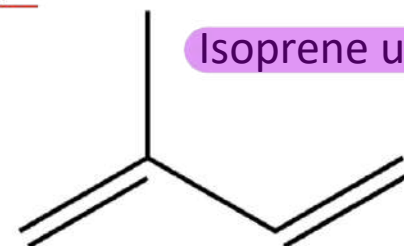
Coumarins



Flavonoids



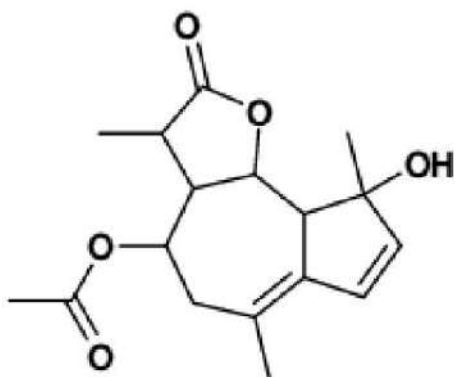
	iso prene units	
isoprene	5	1
monoterpene	10	2
sesquiterpene	15	3
diterpene	20	4
sesiterpene	25	5
triterpene	30	6
tetra	40	8



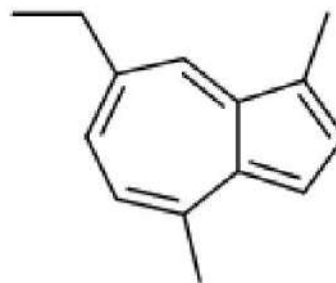
Isoprene units

البابونج: Chamomile(German)

- **Matricine** is a tricyclic sesquiterpenoidal compound that contain furan ring, during **distillation** process the **furan lactone** will be **open** due to **high temperature** and convert it to **carboxylate** called chamazulene carboxylic acid, also we **remove** a **carbon atom** in carboxylate gp in matricin, by this we have **bicyclic structure contain 14 carbon**, so **chamazulene is not naturally** compound and **not a sesquiterpens**.

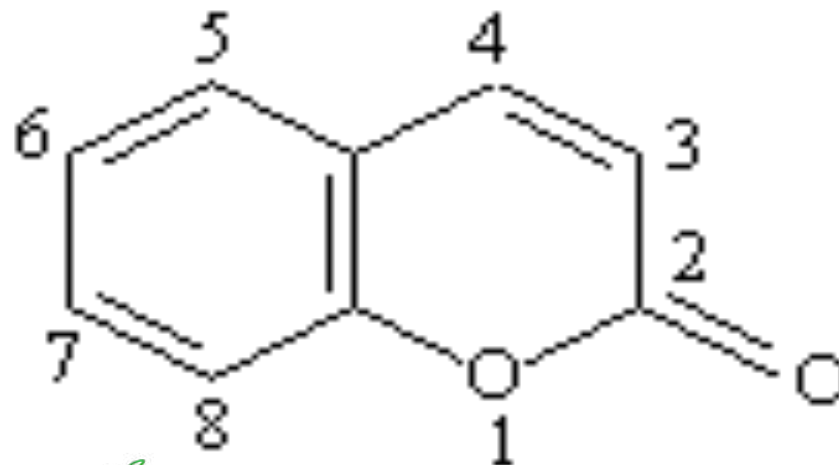


Matricine



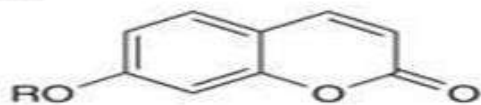
Chamazulene

- **Coumarin** and the other members of the coumarin family are benzo- α -pyrones, while the other main members of the **benzopyrone group**, the **flavonoids** contain the γ -pyrone group.
- Coumarins may also be found in nature as glycosides.



benzo - 2 - pyrone

Coumarins

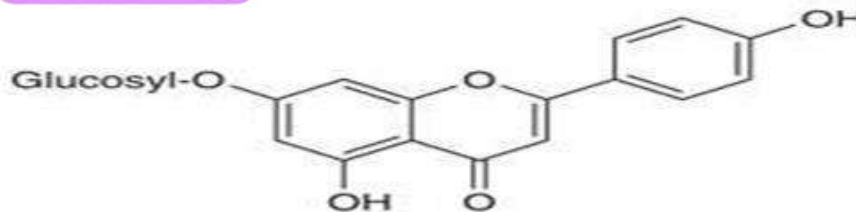


umbelliferone

umbelliferone methyl ether



Flavonoids



apigenin-7-glucoside

Pharmacological activity of Chamomile

- **All** these compounds are responsible for the pharmacological activity, so we use chamomile as antispasmodic and carminative (**orally use**) due to the **activity of flavonoids**, while **topical** use as anti-inflammatory,
- also it's used in teething pain in pediatric, antiseptic, it has ^{يساعد على النوم} hypnotic effect so help u to sleep, also we use it as antacid.



Clove (القرنفل)

Syzygium aromaticum

Family: Myrtaceae



- **Part(s) Used:** dried flower bud.
- **Active Constituents:**
- Clove bud: oil containing Eugenol (90%), Eugenyl acetate, β -caryophyllene.
- • Other components like methylsalicylate, methyleugenol and benzaldehyde.
- • **Herbal Use** $\rightarrow$ tooth pains.
- Clove has been traditionally used as a carminative, anti-emetic,
- toothache remedy and counter-irritant.

volatile oil
has a distinctive
odour.



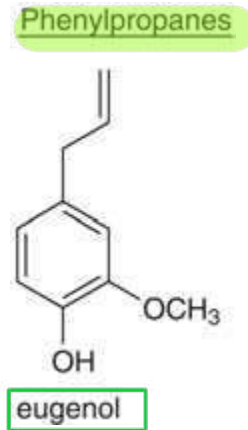
Clove (القرنفل)

Syzygium aromaticum

Family: Myrtaceae



- The distinctive odour of the clove is due to the presence of Eugenol (*phenyl propene derivatives*)
- It's phenylpropene structure and there are hydroxyl and methoxy groups ortho- to-each other.
- The problem of this plant: it mustn't be used with any anti-coagulant drug, so the dentist must be sure to use clove-free compounds if the patient use anti-coagulant drug to prevent the bleeding.



Categories of Volatile oils

- **Monoterpene**-rich volatile oils Some examples:

• Peppermint oil • Lavender oil • Lemon oil • Camphor • Thyme oil • Turpentine oil

- **Phenylpropane**-rich Volatile Oils Some examples:

• Cinnamon oil • Anise oil • Fennel oil • Clove oil • Nutmeg oil • Peru balsam • Tolu balsam

Artemisia cina الشَّيْح الخرساني

- Artemisia cina BERG. Family: Asteraceae/Compositae.
- **Part Used:** dried, unexpanded flower heads
- **Active Constituents---**The chief constituent of Wormseed is a crystalline bitter principle, Santonin:
طارق الدبريات ← anthelmintic property of the drug.
- **Artemisia cina** should be collected in July and August since Santonin attains its maximum at this time of the year
- **Artemisia cina** also named as wormseed contains another bitter principle, Artemisin, and a yellow volatile oil **cineol**.
يستخدم جزء الـ flowers .

الشَّيْحُ الخِرْسَانِي *Artemisia cina*



الشَّيْحُ الخِرْسَانِي Artemisia cina

- **Herbal action and Uses**

- Santonin acts as a direct poison to parasites, and is used as a remedy for **round-worms**, which it rapidly expels; it has also an effect on thread-worms to a lesser degree, but has no action on tapeworms.


- **•Dosage :** Santonin lozenges, B.P.
- **•As a rule,** when a single dose is to be given, it should be administered upon an empty stomach, and the patient should refrain from eating for a short time afterward. A purgative should precede and follow its use.



Toxicity

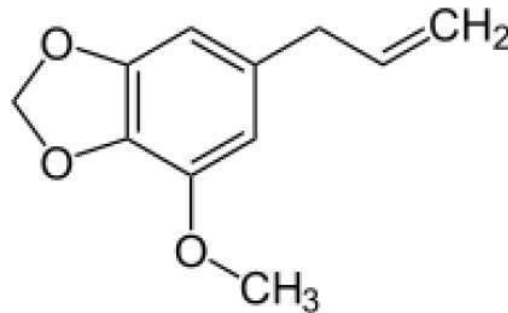
- •Several cases are on record of fatal poisoning by **Santonin**.
- •Santonin produces vision disturbances,
objects first appears blue then yellow, the
absorbed santonin renders urine intense
yellow if acidic, while purplish yellow if
alkaline.

عناش في النظر

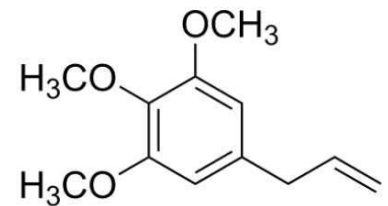
C) **Seeds:** Nutmeg جوزة الطيب

Myristica fragrans Myristicaceae

- القشرة الرفيعة الداخلية التي تغطي الجدار الداخلي لثمرة جوزة الطيب
- Nutmeg: usually used as complete fruit but the **V.O. is obtained from the seeds or kernel.**
- The oil of the nutmeg is very expensive because the fruits need long time to be
- mature and they are very light, so when the farmer cultures large number of the plant trees he will have small weight of the fruits (nutmeg).. يستخدم البذور seeds.

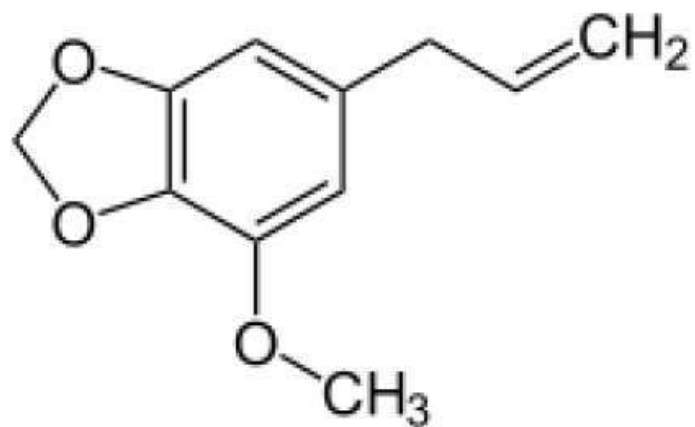


myristicine



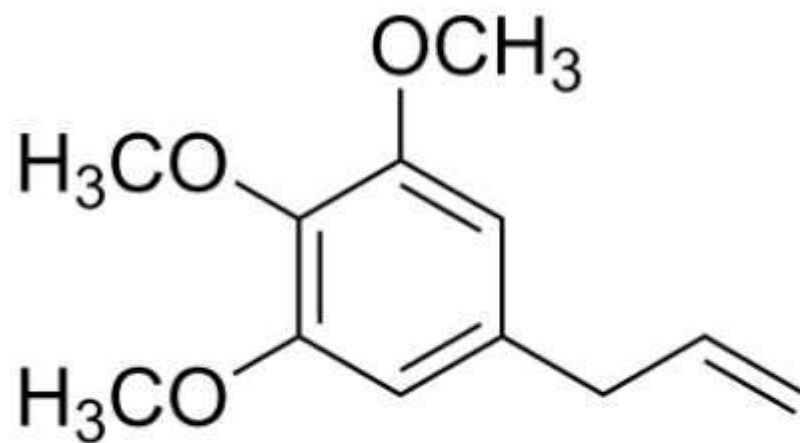
elemicin





myristicine

phenyl propene derivatives.

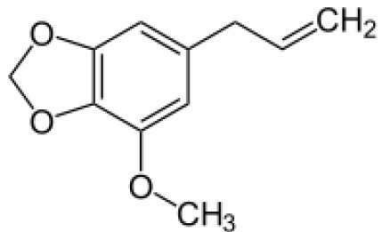


elemicin

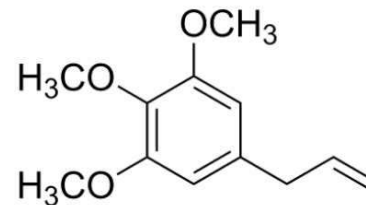
Nutmeg جوزة الطيب

Myristica fragrans Myristicaceae

- To have oil has similar odor to the nutmeg oil, they take the mace. ^{القشرة الخارجية}
- In the US it's used by prisoners as alternative to hallucinogenic compounds, so it's called prison opium because it gives the same effect of the opium.
- The effect of nutmeg is similar to that of atropine, the only difference between them is that atropine causes mydriasis but nutmeg causes miosis يقلل التوسع الحدقي
- They study the ability of use nutmeg as flavouring agent due to the presence of myristicine and elemicin.



myristicine



elemicin

حب البركة

Nigella sativa

Seed معجود - ovary

- **Medicinal Uses (Black Cumin) —**
- This herb apparently may be even more important to the Muslims than to the Christians and Jews.
- يقول رسول الله - صلى الله عليه وسلم إن في الحبة السوداء شفاء من كل داء إلا السأم. أخرجه البخاري ^{طهرته}
- According to an Arab proverb, “in the black seed is the medicine for every disease except death.”
- Small wonder that the literature regards it as carminative, ^{عرفته} diaphoretic, digestive, diuretic, ^{تخفيف عرق الطهرته} emmenagogue, excitant, lactagogue, laxative, resolvent, stimulant, stomachic, and tonic. ^{عسر الحليب}

(Black seed)



Nigella sativa (Black seed)



Antidiabetic Activity of *Nigella sativa* Seed Extract in Cultured
Pancreatic β -cells, Skeletal Muscle Cells, and Adipocytes

Pharmaceutical Biology; Jan2008, Vol. 46 Issue 1/2, p96-104

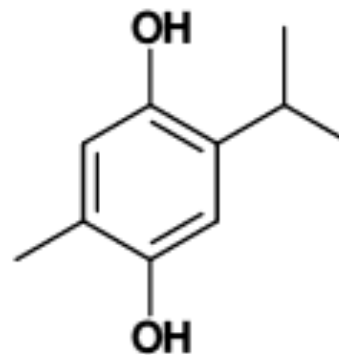
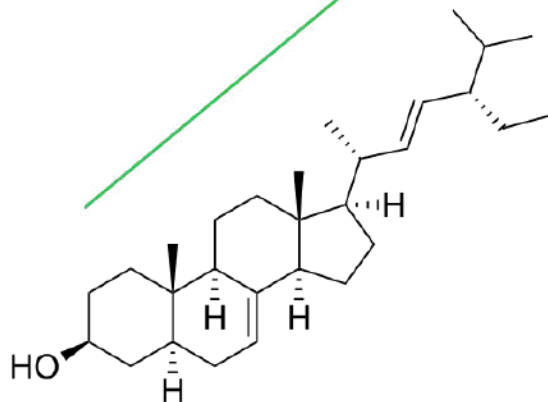


Chemicals and their Biological Activities in: *Nigella sativa* L. (Ranunculaceae) -- Black Caraway, Black Cumin, Fennel-Flower, Nutmeg-Flower, Roman Coriander

- **ALPHA-SPINASTEROL** *Seed*: Antiinflammatory
- **ASPARAGINE** *Seed*: Diuretic
- **CAMPESTEROL** *Seed*: Antioxidant ; Hypocholesterolemic
- **CARVONE** *Seed*; Antiacetylcholinesterase ; Antiproliferative; Antiseptic
- **HEDERAGENIN** *Seed*: Allergenic; Anticapillary-Fragility; Antiedemic; Antifibrinolytic;
- **PHYTOSTEROLS** *Seed*: Antiprostatotic; Hypocholesterolemic
- **THYMOHYDROQUINONE** *Seed*: Antibacterial $MIC=6.25-100 \mu g/ml$;
- **THYMOQUINONE** *Seed*: Antiarthritic; Antiasthmatic; Antibacterial; Antibronchitic;

celbano

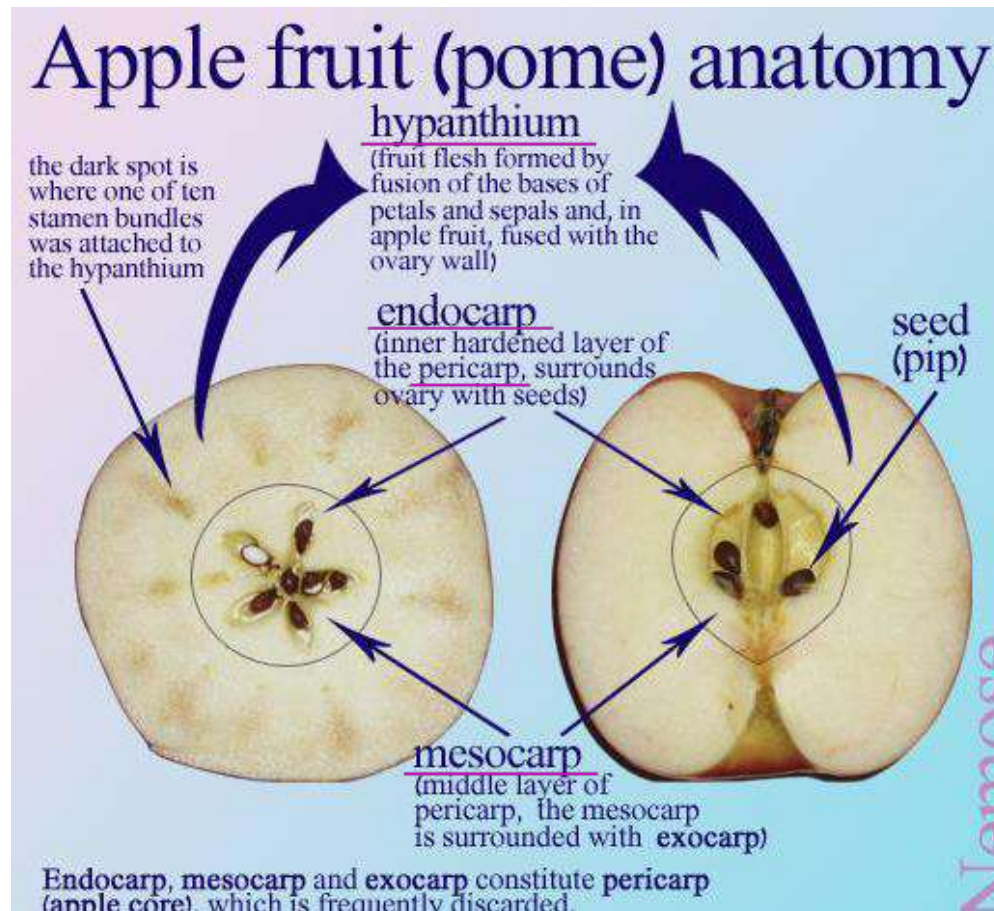
ALPHA-SPINASTEROL



ThymoHydroQuinone

D) Fruits:

- Matured and ripened ovaries. Holds and protects the seeds until they mature.



اليانسون Anise

لزيادة على أدوية الكحة
تقلص من تقلص الحنجرة
مقلص (spasmodic)
مستخدم كمنشط (expectorant)



- Pimpinella anisum L. Family: Umbelliferae or **Apiaceae**. *Carrot family.*
- The medicinal parts are the essential oil from the ripe fruit and the dried fruit.
- **Active constituents:**
- **Volatile oil** (2 to 6%): chief constituent **trans-anethole** (94%),
- **Coumarins**

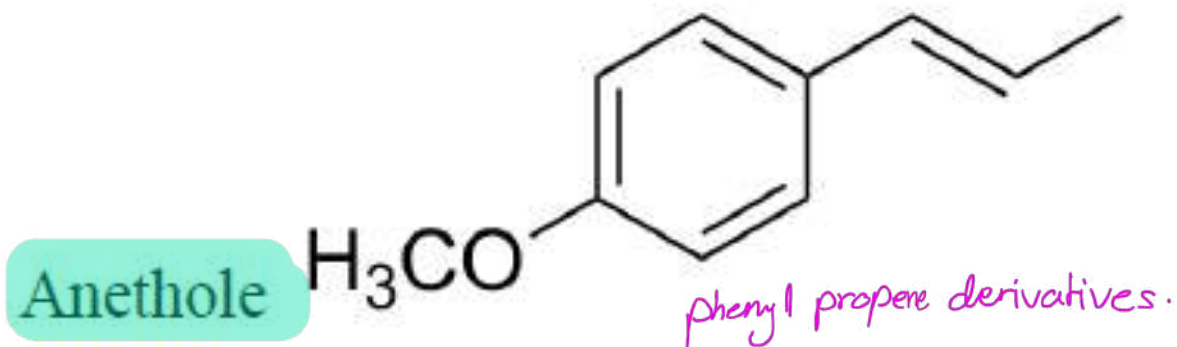
Anise اليانسون

- **Herbal Uses:**
- The drug is said to have an expectorant, mildly spasmolytic and antibacterial effect based on the essential oil.
- Common cold
- Cough/bronchitis *decrease contraction of trachea*

اليانسون Anise

يزيد معدل الحمل
contraception

- The main constituent is **Anethole**, it's a phenylpropene , para to it is a methoxy group , this compound is responsible for the anise odor and many biological effects , a problem is during storage a molecule of the anethole is combined to another molecule of Anethole by the propene side chain to form a dimeric compound , **this dimer binds to the estrogen receptors** (has estrogen-like receptors), so anyone who takes estrogen like combination pills contraceptive that contains estrogen in microgram with anise that's improperly **stored in high temperatures or for long periods** , a competition between the dimeric estrogen-like compound with estrogen is responsible for the failure of contraception when large amounts of the anise is used , and the treatment will be unsuccessful.



anise is available as oil or the anethole is added to the cough suppressants , it **reduces the trachea contractions and reduces irritation that causes the cough.**

- Mainly used as a **flavoring agent** in the pharmaceutical industry , especially for indigestion products like Gaviscon® to provide a better taste for the formula.

Examples of Umbellifera (Apiaceous)



Caraway

(*Carum carvi*)

volatile
oil
of caraway

■ Characteristics

every other
year

يعني سنة تنتج وسنة لا

- Biennial in carrot family
- Usually grown for its seed

- Only require a few plants to have enough seed for a family

- Seeds will shatter when fully mature

- Cut off seed stalk when seeds turn brown and place inside a bag



E) Barks



- Definition:
- Barks consists of all the tissues outside the cambium of the stem or the root of the medicinal plant.
- Collection and Preparation:
- Barks are collected either from stems or roots by making transverse and longitudinal incisions and peeling the outer layers (layers outside the cambium).
- Barks are best collected in the spring (why?)
- They are sun-dried, and some barks are decorticated (e.g. Cinnamon).

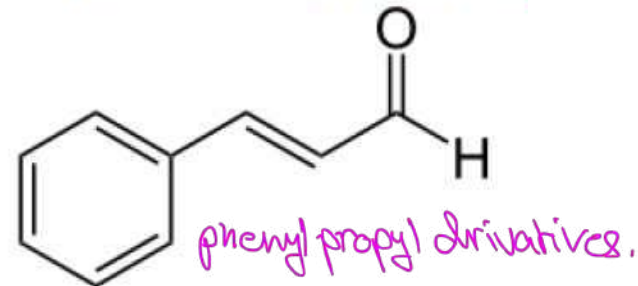


Cinnamomum aromaticum Nees (Lauraceae)

CASSIA, CASSIA BARK, CASSIA LIGNEA, CHINA JUNK CASSIA, CHINESE CASSIA,

CHINESE CINNAMON, SAIGON CINNAMON

- **Synonym** — *Cinnamomum cassia* auct.
- In South China, it is grown in a moderately cool climate, annual rainfall ca. 1200–1300 mm, elevation mostly 90–300 m, usually propagated by cutting but sometimes
- **Chemistry (Cassia)** — Here are a few of the more notable chemicals found in cassia.
- *Cincassiol* — **Antiallergic.**
- Cinnamaldehyde — Orally, cinnamaldehyde **stimulates the CNS at low doses** and **inhibits it at high doses**
- *Cinnamic-ACID* also found in *Cinnamomum verum*.
- *Trans-Cinnamaldehyde*



- **Herbal Use**

- •Cinnamon is stated to possess antispasmodic, carminative antimicrobial and anthelmintic properties..
- •Cinnamon bark may possess a potentiating effect on insulin (Khan et al., 1990), and can be useful in the treatment of type 2 diabetes; as well as lowering triglyceride levels and serum cholesterol (Jayaprakasha et al., 2002).

- يستخدم الي بنابر عندهم لدرودة
- يستخدم النساء الي يعانن تكبرن ميايقن

psos → poly-sotic syndrome

- Cinnamon is mainly used at winter because it's **carminative** , **antispasmodic** , exerts a **warming effect** due to it's **vasodilatation effect**.
- - **Contraindicated in the first trimester of pregnancy** because it can increase the risk of **abortion** due to it's uterine stimulating effect.
- - Also used traditionally to **induce menstruation**.

عشانة على لا تعطى للـ pregnancy
بأنه ٣ أشهر

Cinnamon

مالا خائره

Cinnamon foliage

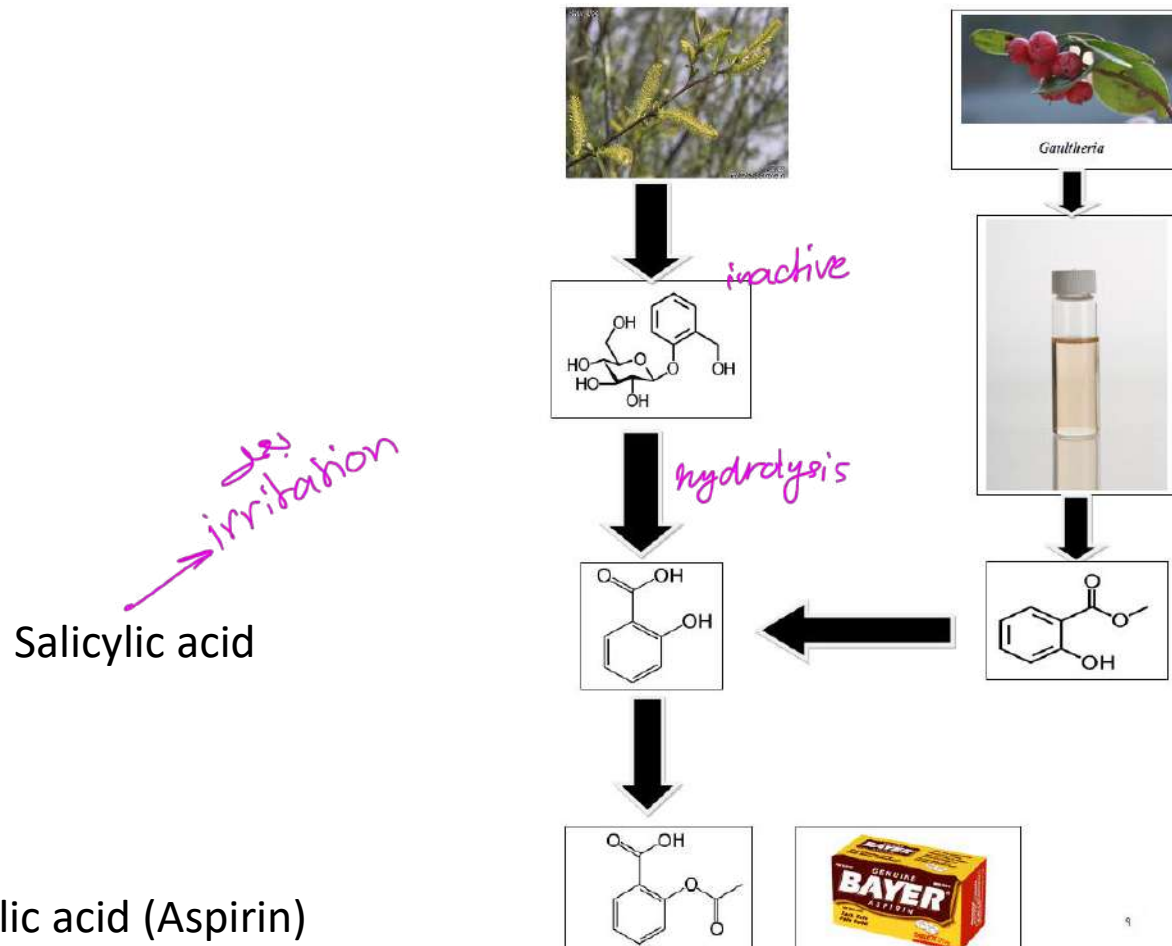


Scientific classification

- Kingdom: [Plantae](#)
- Division: [Magnoliophyta](#)
- Class: [Magnoliopsida](#)
- Order: [Lurales](#)
- Family: [Lauraceae](#)
- Genus: [*Cinnamomum*](#)
- Species: *C. zeylanicum*

الصفصاف

لأسبرين قصة طويلة بدأت عندما استخدم الطبيب الإغريقي أبقراط مستخلص لحاء شجرة الصفصاف لتسكين الآلام حيث يحتوي لحاء الصفصاف على مادة الساليسيلين الفعالة في تسكين الآلام. وقد سميت هذه المادة بهذا الاسم نسبة إلى الجنس النباتي ساليكس وهو الجنس الذي ينتمي إليه نبات الصفصاف. ويوجد مركب آخر مابه لمادة الساليسيلين هو مركب ميثيل الساليسيلات الذي يتواجد في النباتات التي تنتمي إلى نوع الجولثيريا في زيت الوبنترجرين. أما بالنسبة لعقار الأسبرين فقد قام بتصنيعه عالم ألماني يعمل لدى شركة باير، وهو من أطلق عليه اسم الأسبيرين وهنال طريقتان لتصنيع الأسبرين أو الأستيل ساليسيلات، إما من مادة الساليسيلين أو من مادة الميثيل ساليسانات



Acetyl Salicylic acid (Aspirin)

F) Roots & Rhizomes

Rhizome is horizontal stem growing under or sub soil surface.

Common name	Arabic name	Binomial name	Family
<u>Ginger root</u> <i>rhizome</i>	الزنجبيل	<i>Zingiber officinale</i>	<i>Zingiberaceae.</i>
<u>Ginseng root</u>	الجنسنگ	<i>Panax ginseng</i> (Asian)	Araliaceae
<u>Rhubab rhizome</u>	الراوند	<i>Rheum officinale</i>	Rubaceae

Ginger (*Zingiber officinale*)

- from the rhizome
- Over 12 compounds with anti-oxidant activities greater than vitamin E
- anti-tumor
- anti-emetic (inhibits vomiting)



Ginseng

- The roots of the herbaceous plants *Panax ginseng* (Araliaceae)
- Indogenous to China, Korea and Russia,
- *Panax* species have been widely used for the treatment of a number of diseases, including anaemia, diabetes, gastritis, insomnia, and **sexual impotence**, and as a general restorative.

شجيرة فاني
الحلووية





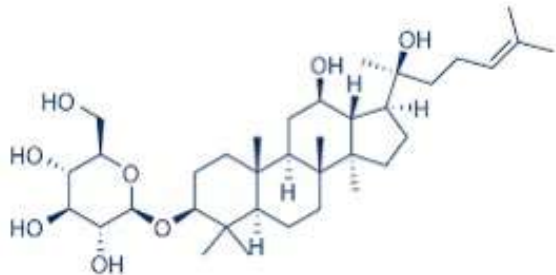
- The dried and usually peeled root provides white ginseng, whereas red ginseng is obtained by steaming the root, this process generating a reddish-brown caramel-like colour.
- Ginseng is classified as an '**adaptogen**', helping the body to adapt to stress, improving energy and concentration, and providing a **restorative effect**. It is also widely promoted as an **aphrodisiac**.

ساقه سفید = سفید

Sexual impotence ← ساقه

- Long-term use of ginseng can lead to symptoms **similar to those of corticosteroid poisoning**, including hypertension, nervousness and sleeplessness in some subjects, yet hypotension and tranquillizing effects in others.

- It contains a large number of triterpenoid saponins based on the dammarane subgroup, saponins that have been termed ginsenosides, or panaxo-sides.
steroid. بتقوى
- These are derivatives of two main aglycones, protopanaxadiol and protopanaxatriol, though the aglycones liberated on acid hydrolysis are panaxadiol and panaxatriol respectively.



Actions and Uses

- Ginseng has been found to:
 - protect the body & nervous system from stress
 - stimulate & increase metabolic function
 - increase physical & mental efficiency
 - lower blood pressure & glucose levels when they are high, and raise them (blood pressure & glucose levels) when they are low.
- The German Commission E approved ginseng as a tonic for fortification in times of fatigue and debility or declining capacity for work and concentration. Also approved ginseng for use during convalescence.

G) Bulb البصلة



Bulb is a specialized underground organ consisting outer scales of that are fleshy & contains reserve food materials.



Squill (بصل العنصل)

• **Origin:** it is the dried, sliced bulbs of *Urginea* *maritima* Linn. Family Liliaceae. • **Active**

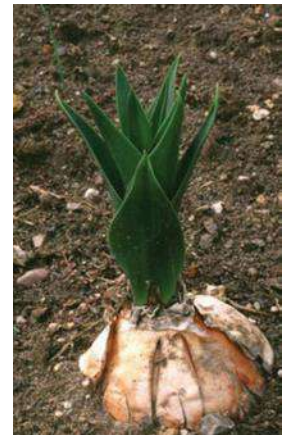
• **Constituents:**

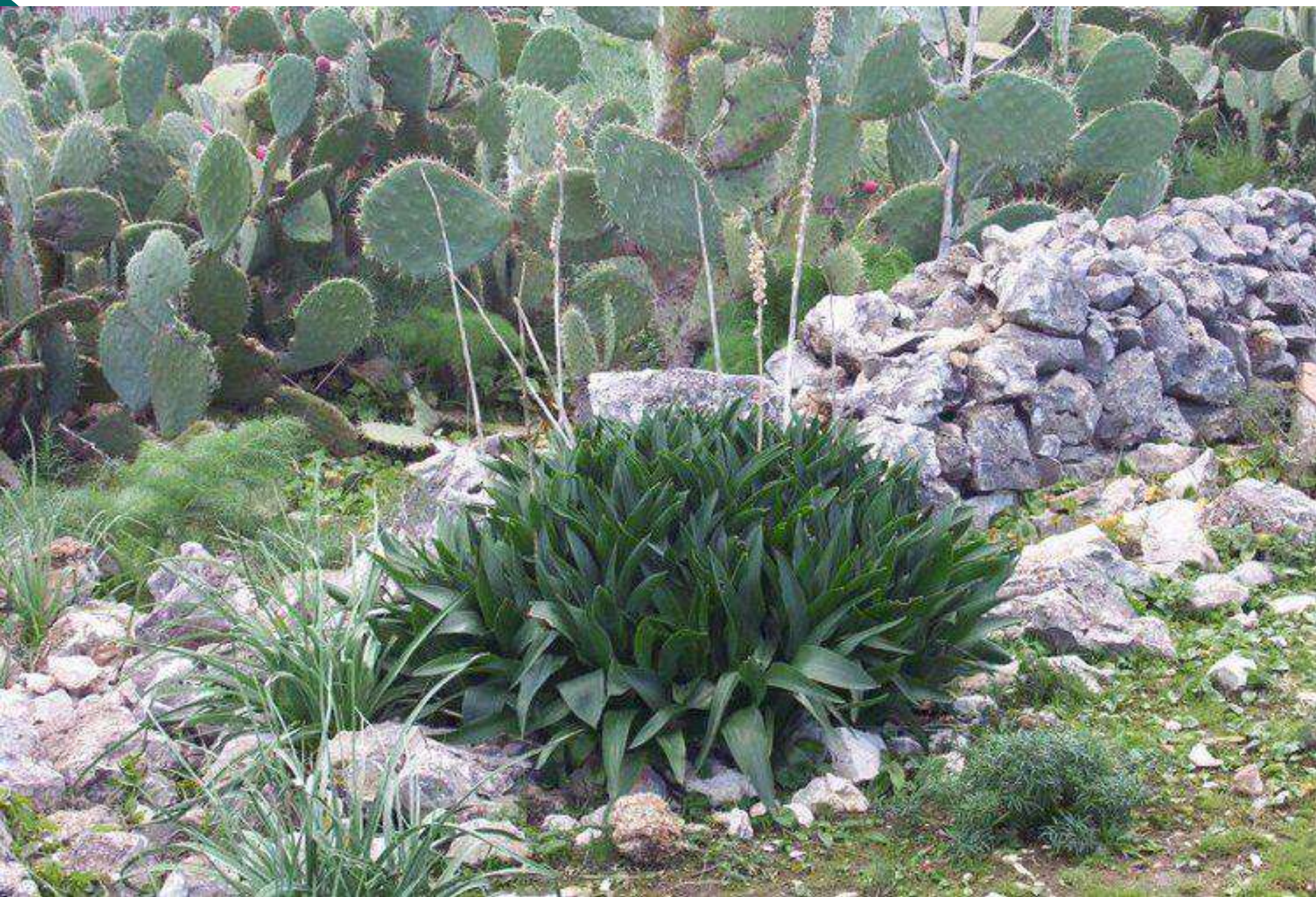
• **Cardiac glycosides:** Scillaren A and proscillaridin A (major constituents); others include glucoscillaren A, scillaridin A. *not major*

• Scillaren B represents a mixture of the squill glycosides.

• **Flavonoids :** Apigenin, isovitexin, luteolin & quercetin. Other constituents: Stigmasterol.

• heart rate ↓ يعني القلب ← negative inotropic
skeletal muscle contraction ↑ يعني تزايد ← positive inotropic





Part used:



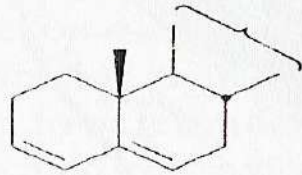


- Squill is stated to possess expectorant, cathartic, emetic, cardioactive and diuretic properties. ملين laxatives ←
- Traditionally, it has been used for chronic bronchitis, asthma with bronchitis, whooping cough, and specifically for chronic bronchitis with scanty sputum.
- The aglycone components of the cardiac glycoside constituents possess digitalis-like cardiotonic properties.
- The squill has shown to have cardiac effects similar to digoxin, including positive inotropic (increase the strength of muscular contraction) and negative chronotropic effects (decrease heart rate)

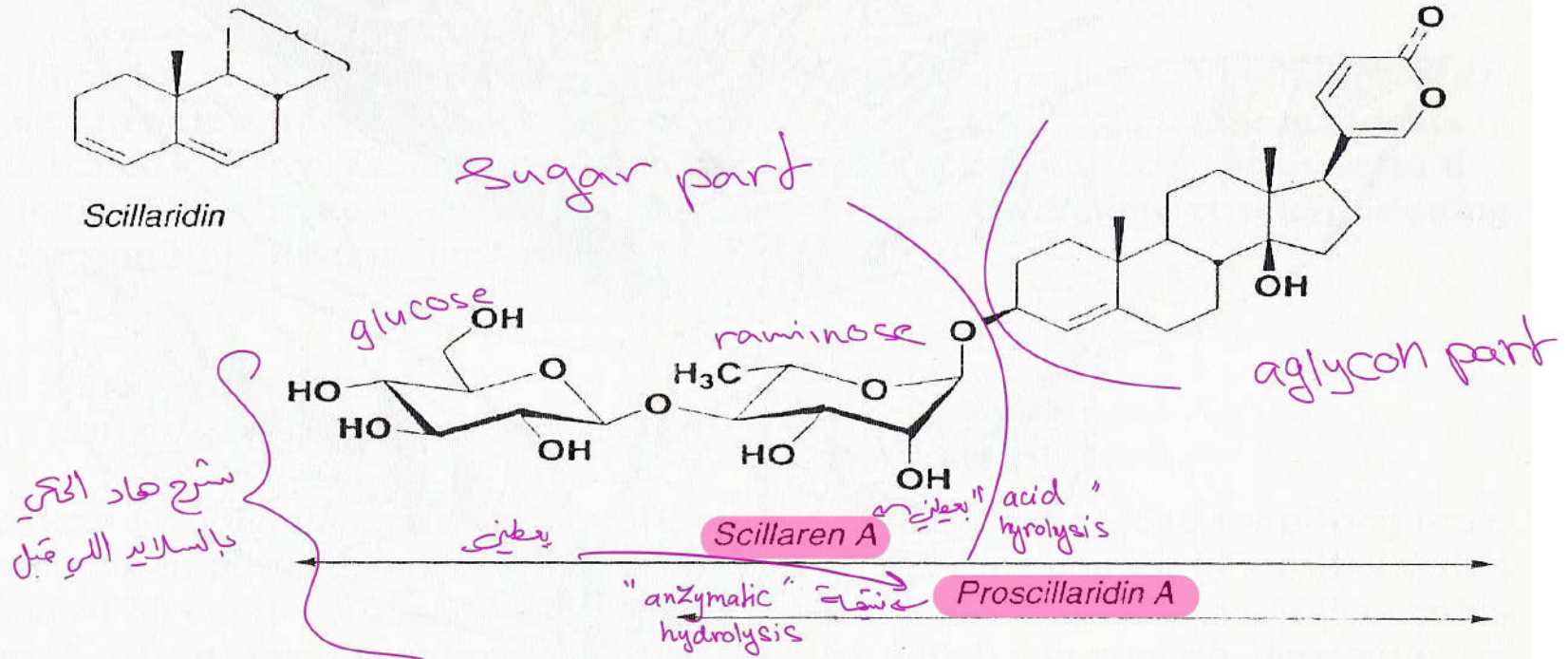
Constituents

- Crystalline glycoside, scillaren A.
- Mixture of glycosides Scillaren B, Scillaren A.
- On **enzyme hydrolysis** with scillarenase give Proscillaridin A and glucose.
- Under **acid hydrolysis** give scillaridin A (Scillarenin) and Scillabiose (Scillabiose consist of glucose and rhamnose).

Scillarins

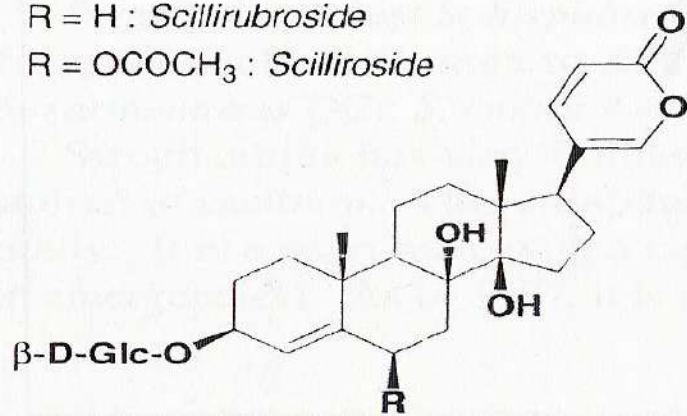


Scillaridin



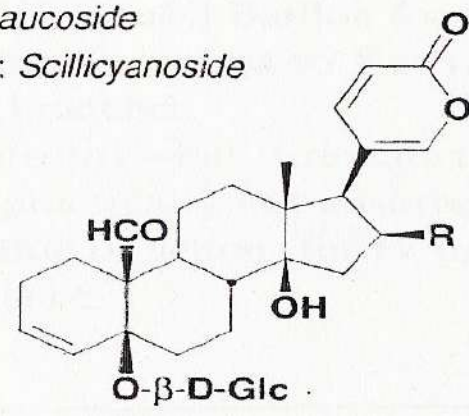
R = H : Scillirubroside

R = OCOCH₃ : Scilliroside



R = H : Scilliglaucoside

R = OCOCH₃ : Scillicyanoside





Constituents

- Glucoscillaren A (a triglycoside).
- Flavonoides (glycosides of quercetin and kaempferol).
- Sinistrin, a fructan resembling inulin (fructan units).
- Calcium oxalate
- Mucilage (glucogalactans).
- Anthocyanins.

جموعة الاعشاب العضوية الغير معدلة جينياً
كل علبة تحتوي اعشاب مدروسة لتناسب وتدعم صحتك
النوع الاول

relax mind اعشاب الاسترخاء

مستخلص من مجموعة اعشاب تعمل على رفع مستوى العقل اللاواعي والادراك، بالاضافة الى الميرمية و اللافندر واوراق
توت العليق و اوراق الستيفيا واعشاب اخرى.

النوع الثاني

skin detox تخليص البشرة من السموم

من الكركدية واوراق الورد المستخدمة لتهدئة البشرة مع الشاي الاخضر لاشراقه صحية مع مكونات اخرى كحب الهيل
وقشر البرتقال و اوراق الستيفيا واعشاب اخرى.

النوع الثالث

stress relief تخفيف التوتر

مصنوع من اعشاب الاسترخاء اللافندر، البابونج مع الليمون لإراحة العقل والجسم خلال الايام المتعبة و للحصول على
الراحة قبل النوم.

و اوراق الستيفيا lemongrass والنعناع و ال rooibos يحتوي ايضا على ال

النوع الرابع

detox تنظيف الجسم

مجموعة اعشاب تنظيف الجسم نبات الأرقطيون والهندباء مع شجر العرعر و خليط الزنجبيل والفلل الاسود والفلل طويل
الحبة مع نبات الفشاغ والسوس و القرقة و الهيل و كبش القرنفل.



The End!

