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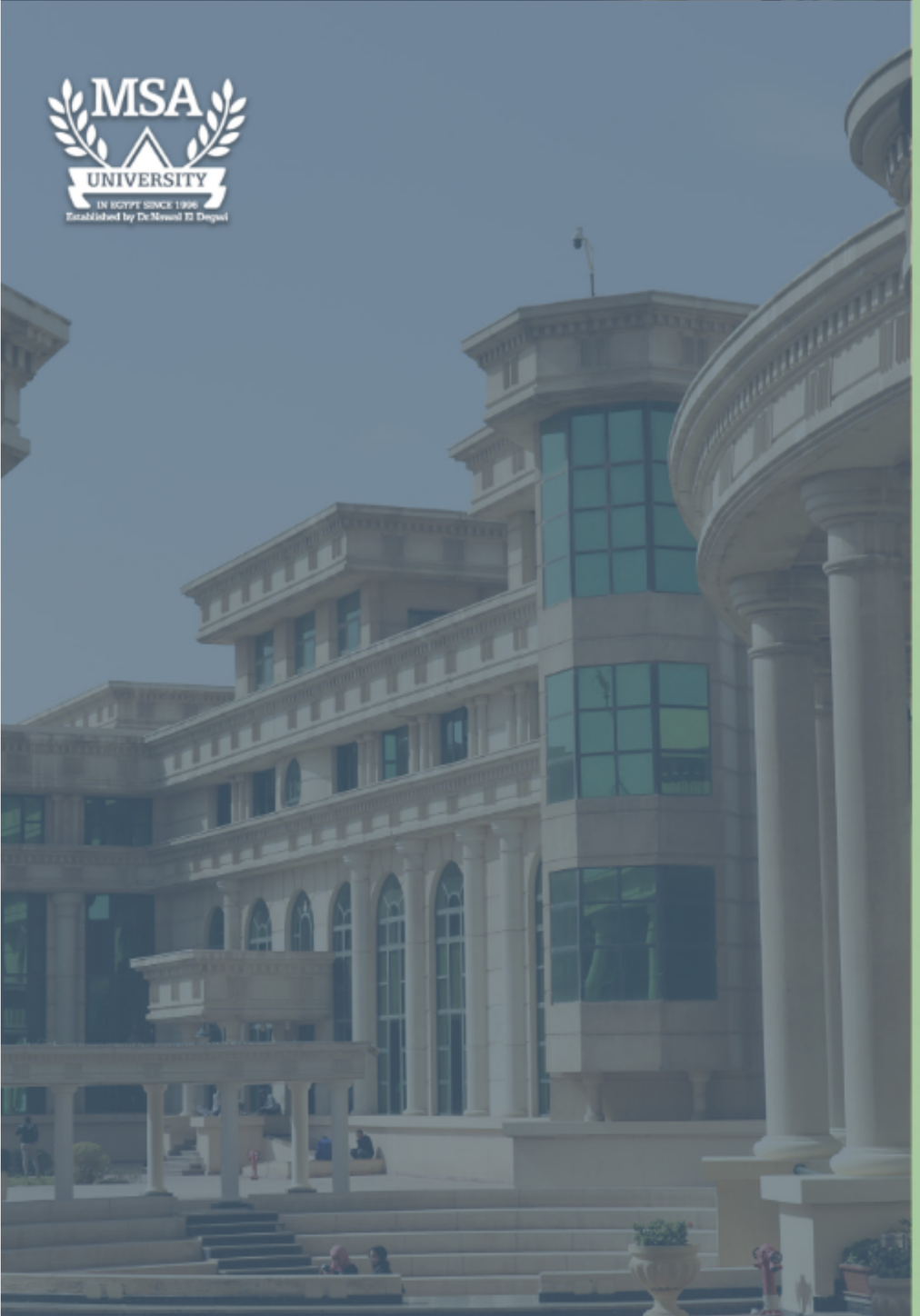
IN EGYPT SINCE 1996
Established by Dr.Nawal El Degwi
MSA UNIVERSITY
جامعة أكتوبر للعلوم الحديثة والآداب

Pharmacognosy
PHG112



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References

Author	Date	Title	Publisher	ISBN
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Biren Shah, Avinash Seth	2012	Textbook of Pharmacognosy and Phytochemistry	Elsevier Health Sciences	8131232603, 9788131232606
William Charles Evans	2009	Trease' s Pharmacognosy, 16th edition	Elsevier Health Sciences	0702041890, 9780702041891

Lecture 11

Unorganized Drugs

Interactive teaching methods and activities

Videos:

https://www.youtube.com/watch?v=mwkJ_gI8aos

https://www.youtube.com/watch?v=mfMVfvWgonE

https://www.youtube.com/watch?v=xDpsyQOkTTg

Learning Outcomes

By the end of this lecture, students should be able to:

1. Knowledge / Remembering

- **Define** unorganized drugs and state their key characteristics.
- **List** the main classes of unorganized drugs (resins, gums, latex, extracts, animal drugs).

2. Comprehension / Understanding

- **Describe** the origin and formation of unorganized drugs.
- **Explain** the general properties and therapeutic uses of common examples.

3. Application

- **Apply** simple chemical tests for identification of selected unorganized drugs.
- **Relate** active constituents to their pharmacological effects.

Learning Outcomes

By the end of this lecture, students should be able to:

4. Analysis

- **Differentiate** between different classes of unorganized drugs based on composition and properties.

5. Synthesis / Creating

- **Construct** a simple classification chart or identification scheme for unorganized drugs.

6. Evaluation

- **Evaluate** the therapeutic importance and safety of selected unorganized drugs.

Unorganized drugs

1-Crude drugs of animal or plant origin, having no cellular or definite structure

2-Mixture of chemical substances or decomposition products substances originally present in the biological source of the drug

3-Produced either normally or pathologically due to injuries or incision

Unorganized drugs

I-Resins & Resin combinations

II-Gums
e.g. gum arabic & gum tragacanth

III-Dried latices
e.g.

IV -Juices
e.g. Aloe

V:Dried extracts
e.g. gelatin, agar, bile & catechol

Resin: e.g. Colophony, turpentine oil, Guaiacum

Resin combination

Oleoresin: e.g Ginger, capsicum

Oleo-gum-resin: e.g. Myrrh, Ammonicum

Balsam: e.g. Benzoin-Peru

Resins and resin combinations

I: Resins and resin combinations

1-Resins are hard, solid or semisolid amorphous
organic substances of complex nature.

2-Insoluble in water but dissolves in alcohol, chloroform and ether and then on evaporation deposit the resins.

Myrrh

It is an oleo-gum-resin obtained from the stems and branches of *Commiphora myrrha* , *C. molmol* and other species of Commiphora, F. Burseraceae

Active Constituents

1- 1.5-17% volatile oil composed of limonene, pinene, cinnamaldhyde & cadinene

2- Resin consists mainly of α- and β- commiphoric acid and commiphorinic acid

3- 60% gum

Test for identity

1- Emulsion test: Mix powder myrrh+ water

Yellow brown emulsion is formed

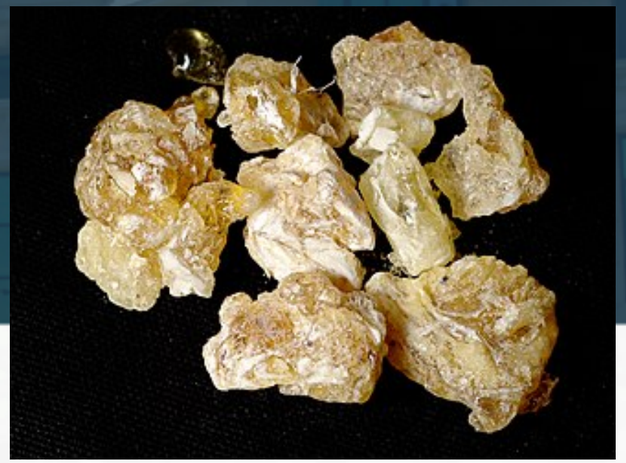
2-Triturate about 0.5g of Myrrh with 1g of sand and shake with 10ml of ether. Filter, and evaporate in a porcelain dish. Add few drops of nitric acid to the residue where a purplish violet colour is produced.

Uses

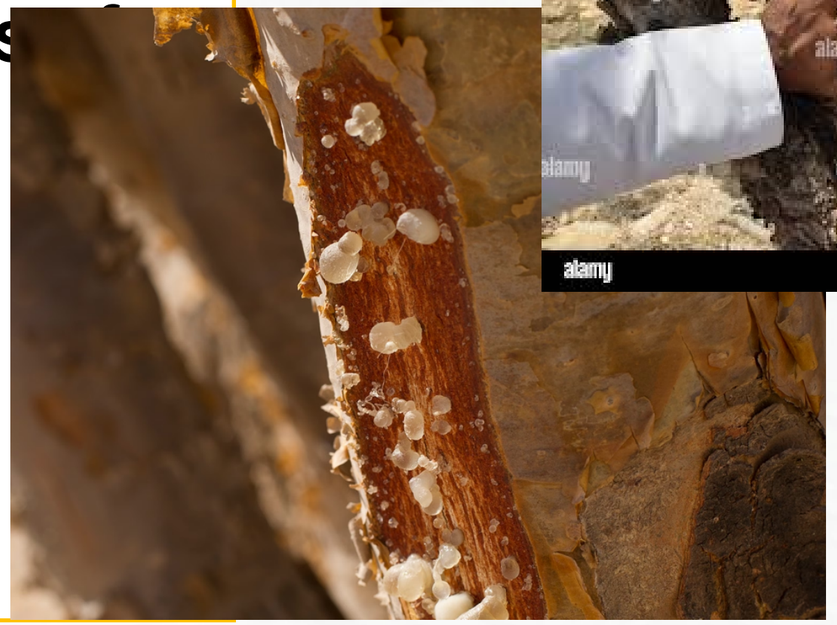
1- Mouth wash

2- Uterine stimulant

Frankincense



Source:
Frankincense, also known as olibanum is an aromatic resin obtained from trees
Boswellia sacra; family Burseraceae



Chemical constituents:

- Acid resin (6%), soluble in alcohol
- Gum (similar to gum arabic)
- alpha-boswellic acid , olibanic acid
- Volatile oils: monoterpenes, sesquiterpenes, and ketones.

Uses:

1-Boost immunity
2-Mood enhancer
3-Enhance cognitive performance
4 -Ease respiratory issues like asthma
5-Supports better digestion, treats inflammatory bowel diseases, ulcerative colitis
6-Reduces arthritic symptoms : rheumatoid arthritis , osteoarthritis
7- Maintain oral health
8-Anticancer properties: boswellic acids have an antiproliferative effect on tumours

Cosmeceutical Applications:

1- Improves the condition of the skin: promotes collagen growth by reducing free radicals, their antioxidant properties increase collagen cell growth and formation.
Reduce the appearance of wrinkles

2- It is ideal for treating acne.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Dried Latex

Dried Latex

Latex is an emulsion or suspension that the continuous phase is an aqueous solution of mineral salts, protein, tannins, gum, and starch.

Latex is often white in colour *e.g.* Opium, buff, yellow or red.

Opium

It is the latex obtained by incision from the unripe capsules of *Papaver somniferum* Fam. Papaveraceae and dried partly by spontaneous evaporation and partly by artificial heat.

Active Constituents

1- Alkaloids. It contains about 25 different alkaloids, which occur in combination with meconic acid. The most important alkaloids are morphine, codeine, narcotine, thebaine and papaverine.

2- Mucilage, wax and sugar.

Test for identity (test for meconic acid)

Warm 20-30mg of powdered opium in 2-3ml of water for few minutes and then filtering. Add few drops of 5% ferric chloride where a purplish red colour is produced and not destroyed by addition of hydrochloric acid or 5% mercuric chloride

Uses

1- Sedative , hypnotic, and analgesic
2- Astringent
3- Cough sedative


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Dried juice

Aloe

Source:

It is the solid residue obtained by evaporating the liquid,

which drains from the cut leaves of *Aloe vera* F. Liliaceae.

Cosmeceutical Applications:

Wound healing, sunburn, hair tonic and minor skin irritation

Active Constituents

1- Anthraquinones e.g. Aloin, barbaloin, isobarbaloin, emodin and chrysophanoic acid.

2 Saccharides e.g. cellulose, glucose, mannose and L-rhamnose.

3- Enzymes e.g. oxidase, amylase and lipase

4- Vitamins e.g. B_1, B_2, B_6, C, E, folic acid and β-carotene

5- Minerals e.g. calcium, sodium, manganese, magnesium, zinc and cupper.

Uses

Treatment of constipation and peptic ulcers

Test for identity

Modified Borntrager's test

Mix 0.1g of powder with 5ml of 5%$FeCl_3$ and 5ml dil. HCl. Heat for 5 minutes in boiling water bath and cool. Shake with benzene and separate the benzene layer and add NH_4OH , pink to red color is formed in the ammonical layer.

Unorganized Drugs From Animal Origin

Dried Extracts

This group includes drugs prepared by evaporating aqueous decoction of whole or parts of certain plants or animals.

Gelatin

It is the protein obtained by boiling the collagenous tissues of animals such as skin, tendons, ligaments and bones with water, evaporating the aqueous extract and drying the residue in air.

Cosmeceutical Applications:

Keeps the skin hydrated, enhances the skin elasticity and firmness.

Active Constituents:

It is formed mainly of protein and gluten

Uses:

1- Treatment of osteoarthritis, rhematoid arthritis and osteoporosis.

2- Aids in weight control

2- Nutrient and bases for glycerin suppositories

3- Preparation of nutrient medium for bacterial growth

Tests for identity

1- On heating with soda lime , ammonia odour is evolved

2- 2% hot aqueous solution gelatinize on cooling

3- The aqueous solution gives a precipitate with solution of tannic acid and lead subacetate.

A- Animal drugs from glands and glandular secretion

Thyroid gland

Part used:

The thyroid gland of the ox , the sheep or the pig

Constituents:

The active constituent is **thyroxine** (tetraiodothyronine) which contains about 65.1% of iodine The glands also contain tri-iodothyronine which has about 5 times the activity of thyroxine, and di-iodo thyronine which is physiologically inactive

Uses:

Thyroid gland is used in hypothyrodism , myxedema (sever hypothyroidism), goitre , and obesity

Small doses of thyroid are prescribed as a general tonic

Pepsin

Source

Pepsin is prepared from the mucous membrane of the stomach of domesticated animals such as pig, sheep or calf.

Description:

Pepsin occurs as pale yellowish powder or in translucent scales or grains ; odour, faint free from putrescence ; taste slightly saline and bitterish.

It is soluble in water , in physiological solution of sodium chloride and in dil. Acids. It contains the enzyme pepsin, but does not consist of it. It is most active at pH 2 and a temperature of 40°C. The acidified aqueous solution converts insoluble proteins into soluble proteoses and peptones. Its action is inhibited by NaCl and alcohol. it is completely destroyed at 70°C.

Uses:

It is used in dyspepsia caused by deficient gastric secretion

Pancreas

Source:

Pancreas used in medicine is obtained from the pig

Commercial pancreatin:

It is a mixture of pancreatic enzymes vs. trypsin (which converts proteins) ;amylase (which digests carbohydrates) and lipase (which digests fats) It is obtained by extracting the minced pancreas with water or dil. HCl and precipitating with alcohol, collecting and pressing the precipitate and drying at 40°C.

Pancreatin is a pale cream-coloured powder with a slight meaty odour, It is soluble in water

Crude insulin may be prepared by extracting the fresh pancreas with alcohol and sodium bicarbonate, pressing and filtering and fractionally precipitating with alcohol. **Insulin has the property of reducing the amount of sugar in the blood and is employed as a remedy for diabetes.** Fresh pancreas yields about 0.2% of crude

B- Drugs from entire animals

Cochineal Coccus ; Coccus Cacti

Part used

The dried full-grown fecundated female insects belonging to the species *Dactylopius coccus*, family Coccidae. The insects are indigenous to central America and Mexico; now the drug is chiefly obtained from Canary islands

Constituents:

Cochineal contains about 10% of **a red colouring matter, carminic acid** in addition to 10% of fat, 2% of wax together with albuminoids and inorganic matter

Uses:

Cochineal is used as a colouring matter for tooth-pastes , tinctur

Drugs from animal origin

Name	Source (part used)	Active Constituents	Uses
Thyroid gland	The thyroid gland of the ox , the sheep or the pig	thyroxine (tetraiodothyronine)	In hypothyrodism , myxedema , goitre , and obesity
Pepsin	From the mucous membrane of the stomach of domesticated animals such as pig, sheep or calf.	.....	It is used in dyspepsia caused by deficient gastric secretion
Pancreas	It is obtained from the pig	Commercial pancreatin is composed of : Trypsin, amylase , lipase	Insulin has the property of reducing the amount of sugar in the blood and is employed as a remedy for diabetes.
Cochineal	Female insects	red colouring matter, carminic acid	Used as a colouring matter for tooth-pastes , tinctures

Google notebook link:

https://notebooklm.google.com/notebook/5b8c9885-3660-4f77-a955-b3a75113c313


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