



**الجامعة التقنية
الشمالية
المعهد التقني الطبي
الموصل**



العقاقير الطبية

PHARMACOGNOSY

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Lipids

Which include: fixed oil ,plant & animal fat, animal &fat wax

Lipids:

Are ester compounds result from combination of fat acid with alcohol of high molecular weight which is called:"Glyceride"

Fixed oil &fat are differ from wax according to the type of alcohol.

The source of fixed oil &fat are from plant origin like:

Olive oil-cocconut - peanut.

OR from animal like:.

Lard sheep fat.

Fat is solid in ordinary temp. which is differ from fixed oil which is liquid but in some cases like "cocoa buter" it is solid in normal condition while it is from oil.

Cod-liver oil which is from animal fat but it is liquid.

In plant:

Oil & fat present in different part but in seed it contain high percentage which is consider as a source of fixed oil like:

1-cotton seed oil.

2-line seed oil.

3-sesame seed oil.

Methods of obtaining fat &fixed oil

Fixed oil:

Usually obtained from plant sources by: using strong crushing and some time use the temp. and also used organic solvent to extract this fixed oil.

Fat:

Usually obtained by separation from animal tissue by using steam with pressure which dissolve the fat which is floating to the top and separate the fat by pouring.

Uses:

In- ointments - liniments - creams - soap - varnishes – lubricants – source of food – sclerosing agent in treatment in varicose- veins

Fixed oil: example

1-castor oil -2-linseed oil –3-peanut oil –4- cotton seed-5-sesame oil –6- swaad almond oil –7- coconut oil –8- cod liver oil –9-corn oil.

Fat: example

1-lard –2-lanolin or wool fat – 3-sitosterols –4- ox gall or oxbile

Wax: example

1-bee wax –2- carnauba wax

Castor oil:

Obtained from dried ripe seed of: ricinus-commuris

Belong to family :Euphorbiaceae .

The seed contain about:

50% fixed oil.

20% protein.

_ Ricinine

These plants contain poisonous protein (ricin) especially for animals which need removal from this oil by using steam during extraction.

Uses:

Laxative -ointments- in soap .

Cod liver oil

Which are fixed oils obtained from cod liver it contain:

- 30%-65% fixed oil

- cholesterol
- vit. A & D

Uses:

A source of food in case of malnutrition and rickets and in case of T.B and in teeth caries .

Lin seed oil

Also called flax seed which obtained from the dried ripe seed of:

Linum usitatissimum to the family linaceae.

Const:

1-25% protein

2-20%-30% fixed oil which contains

A-linoleic 15%.

B-linolenic 15%.

C-isolinolenic 65%.

Uses:

In burns , demulscent , laxative , food sources for animals (cloth , soap , paper , varnish)

Sitosterols:

Which is called phytosterole . which is able to combine with the cholesterol and prevent absorption from alimentary tract .

This fat obtain from plant like:

Corn seed- cotton seed.

Uses:

Prevent ppt. Of cholesterol to the wall of blo. Vess. And used in treatment of
(arteriosclerosis)

Does: 9 GM.

Ox bile or ox gall

Obtained from family Bovidae.

It is normal exeret of liver in the intestine to help the digestion which convert the fat to emulsion for easy obsorp and consider as intestinal antiseptic to prevent fermentation.

Constit:

1- 80-90% water.

2- 10-15% bile salts & bile pigments cholesterin – choline fat – protein – urea

Dose:

300 mg orally as adigestant.

Resins &resin combinations

Are amorphus products of complex chemical natural .thy are usually hard, transparent or translucent and upon heating soften & finally melt .
chemically they are complex mixture of resin acids resin alcohol , resin tannis , ester resin.

Thy are insoluble in water ,resin are the end product of metabolism or

Oxidation product of the terpenes.

It occure of ten in more ,less homogenous mixture with volatile oil called:

Oleovesins ex:

-turpentine

-canada balsam

or occurs mixture with gums called: gum resins.

Balsams are resinous mixture that contain cinnamic or benzoic acid or both or ester of these acid such as (perubalsam – tolubalsam)

Resin:

When resin are separated and purified ,the are usually brittle, amorphous Solids which fuse upon heating, thy are insoluble in water but dissolve in alcohle or other organic solvents forming solution which on waporation deposit .

the resin as avarnish like film. When burn it have smoky flam .

the most important crude sources of resins are:

rosin – podophy lium – cannabis

Rosin:

Uses:

Plasters & ointment in vet medicine as :
Diuretic- varnish- paint – soap- sealing wax

Podophyllum :

Dried rhizome & root of podophyllum petta gum. it is also called man drake. which is perennial herb

const:

1-resin 3.5-6% consist of:

-podophy llo toxin.

-picropodophyllin.

2-flavenal .

3-quercetin.

4-starch .

5-gallic acid .

Uses: (Purgative)

Oleoresin :

Are homogeneous mixture of resins and volatile oil such as :

Turpentine oil:

Which is found in pihus palustris plant found in (U.S.A)

Uses:

Externally as. Rubificent in plaster other plant :

-aspidium or maiefern -----anthelmintics .

-capsicum -----rubificent irritant-stimulemt –carminative

Balsams:

Peru balsam:

Obtain from myroxylon pereirae tree.

Which is 25 meters in height .

Constit:

1-volatile oil 60%

- benzyle cinnamate

- benzyle benzoate
- 2-resin esters 30-38%
- 3-vanollin-cinnamic acid

Uses:

Local irritant – parasiticids – skin disease –antiseptic – expectorant .

Antibiotics

are natural products obtained from the growth of culture of bacteria ,molds and soil actinomycetes.

The word "antibiotics" is derived from the term antibiosis and literally means "against life" {anti-against. Biosis life}.

Antibiotics: As a chemical substance derived from or produced by a living organism which in low concentration is destructive or inhibitory to microorganisms. All antibiotics are complex compound, in a few years ago, all were obtained biosynthetically from living microorganisms, principally actinomycetes, molds and few bacteria.

-Chloramphenicol: Obtained by fermentation of streptomyces venezuelae, was the first antibiotics to be produced commercially by chemical synthesis.

-Tetracycline: May be either derived naturally from actinomycete or prepared by modifying the structure of oxytetracycline.

The activity of penicillin is limited primarily to {Gram + positive} microorganism, where as streptomycin affect {Gram - negative} microorganism.

For this reason these antibiotics are referred to as "narrow spectrum" antibiotics.

-Chloramphenicol was the first of the so-called "broad spectrum" antibiotics. It was followed by the tetracycline.

The broad spectrum group combat both "G-positive" and "G-negative" microorganisms. In addition, show specific activity against certain viruses and rickettsiae

- The activity of antibiotics referred to the ability to interfere the metabolic process of an organisms.

"penicillin"

Defined: As an antibiotic substances produced by the growth of penicillium notatum, family "Aspergillaceae". It inhibited {G+} Cocci such as :

- Streptococci
- Staphylococci
- Pneumococci

As well as a few {G -} forms.

Penicillin is not a pure substance but a mixture of several fractions, the most important penicillin G and penicillin V.

{F.G.K.X.V}

- **penicillin{G}**: Offered the greatest advantages in general effectiveness and ease of manufacture.

- **penicillin{V}**: A form that resists destruction in the gastrointestinal tract.

A new types referred to as "synthetic" penicillin have been discovered.

All type of penicillin have the same basic structure.

Because penicillin is an acid {Carboxylic acid radical}. It is usually combined as the sodium or potassium salt for therapeutic use. These preparation are more stable than the acid and are more slowly absorbed for prolonged activity.

Penicillin is administered by injection in the form of the procaine salt in aqueous suspension or in aluminum stearate suspension.

Combinate of procaine salt with crystalline penicillin offer both immediate absorption for quick therapeutic action and delayed {maintenance of high blood level concentration}

"potassium penicillin G" or Benzyl penicillin. Contain not less than 85% of total penicillin.

Properties: {potassium penicillin G}:

Occurs as colorless or white crystals. It is practically odorless. The powder or crystals are not affected by air or light but its solutions deteriorate rapidly at room temperature.

Uses & Doses:

Is an antibacterial antibiotic, it is most effective against {G +} bacteria.

Dose: Oral or I.M **400,000** u.s.p **4** times daily..

Procaine penicillin G: Has a potency of not less than 900 u.s.p. penicillin units per mg. it contains not less than 85% of procaine penicillin G. is equivalent to 1.009 units.

Uses: Is antibacterial antibiotic having the advantage of prolonged action due to slow absorption.

Usual dose: I.M. **300,000** u.s.p. unit every **12** or **24** hours.

Benzathine penicillin G: contains not less than **1.050** unit per mg, of total penicillin as benzathine penicillin G.

{One mg. is equivalent to **1.211** units}.

Uses & dose: This highly insoluble salt of penicillin G permits the maintenance of penicillin blood levels for **2** weeks following single injection.

Dose: I.M. **600,000** u.s.p. units {approximately **500mg** of benzathine penicillin G}.repeated as necessary.

"Cephalothin":

Is an antibiotic substance produced by the growth of cephalosporium acremonium.

It was originally obtained from sea water collected near a sewage outlet off the coast of Sardinia.

This substance was studied in the local treatment of :

- Staphylo coccus.
- Strepto coccus .
- Typhoid and paratyphoid fever.
- Brucellosis.

Cephalothin is poorly absorbed from the gastric intestinal tract and thus is administered intra muscularly.

Dose: 500mg I.M every 4-6 hours.

Product: Keflin, Ceforin, Cephalosporin.

"Streptomycin": Defined as antibiotic substances produced by the growth of streptomyces griseus. {family streptomycetaceae}.

It showed a strong bacteriostatic action against micro-bacterium tuberculosis.

If the antibiotic give orally no absorption occur from the intestine, this lead to use of streptomycin in treating intestinal infection.

If the drug was given intramuscularly, vertigo and deafness occur.

Mixture of streptomycin and dihydrostreptomycin were preferred.

Streptomycin Sulfate: Is employed as an antibacterial antibiotic agent in the treatment of certain {G-} infection it is also effective in tuberculosis.

Dose: 1gm I.M. daily.

Ampicillin;

It absorb slowly from gastroin testinal tract it given orally or I.M.

Dose: 250-500mg. (4 time daily)

Penicillin-Streptomycin Combination:

Mixture of penicillin and streptomycin would offer a combination product capable of inhibiting infection caused by both {G+ & G-} bacteria.

Chloramphenicol: An antibiotic produced by growth of streptomyces venezuelae.

Is a broad antibiotic. It is effective against G+ and G- bacteria and also against rickettsial disease. Chlo. was and still is, the drug of choice in the treatment of typhoid and paratyphoid fever.

It occurs as fine white to grayish white or yellowish white. 1gm dissolves in about 400ml of water.

Uses & doses:

Its greatest value is in the treatment of enteric infection caused by salmonella species, also acute brucellosis, rickettsial and viral infection.

Dose: 500mg every 6 hours.

{ or 0.5-10% ointment or solution }.

Tetracyclines: Are a group of potent broad spectrum antibiotics produced as metabolites of certain species of streptomyces or by chemical modification of the biosynthetic substance or by chemical synthesis, they are important in treating a variety of infectious diseases.

Chlortetracycline: Originally named Aureomycin which is produced by the growth of streptomyces aureofaciens.

Its range of activity parallels that of chloramphenicol and it has been used for rocky mountain spotted fever, rickettsial pox, psittacosis, acute pneumonia, brucellosis, amebic dysentery.

When given orally, nausea sometimes occurs but this may be avoided by the administration of milk.

Dose: 250mg 4 time a day .

it is used also topically to the eye lid or conjunctiva as solution.

Oxytetracycline: First appeared on the market as terramycin, an antibiotic produced by the growth of : {Streptomyces rimosus}. Is a yellow, odorless, crystalline powder, it is stable in air but exposure to strong sun light causes it to darken.

Uses: Is employed in G- infection caused by E. coli, Aerobacter aerogenes , Brucella, klebsiella and for rickettsial disease. It is classed as an anti-protozoan.

Dose: 250mg 4 time a day.

Tetracycline: Is a broad spectrum antibiotics which may produced by several methods:

By natural fermentation:

It is used in treating many bacterial, viral and rickettsial disease. They have no effect on fungi for this reasons, a number of combination of the tetracycline with "Nystalin or amphotericin have been marketed".

This substances added to control or prevent Fungal infection.it is an antibacterial and antirickettsial antibiotic it is used in the treatment of viral disease.

Dose: 500mg 4 time a day.

Erythromycin: It is an antibacterial substance produced by the growth of streptomyces erythreus.

Which is resembles closely to penicillin in action but it has a broader spectrum of activity in so for as viral, rickettsial and amebic disease are concerned.

It is used in treating cases where G+ cocci have develop resistance to penicillin or to other antibiotics. The blood level reaches a peak a bout 3 hours after oral administrate and the drug may be detected in the blood for about 8 hours.

It is does not alter the normal intestinal flora as other antibiotics.

This antibiotic is of great value in treating patients who have a sensitivity to penicillin.

Dose: 250mg every 6 hours.

Usual dose range: is oral or I.V. 1-2gm daily.

Neomycin: Is the antibiotics substance produced by the growth of streptomyces fradiae.

It characterized by rapid antibacterial action against G+ and G- organisms.

Neomycin is much too toxic for systemic use causing both kidney and eight cranial nerve damage.

When taken orally it is very poorly absorbed from this reason it is use for gastrointestinal tract.

It is also use for dermalities, pustules, boils and prevent infection during treatment for burns.

It is non irritating when applied to both skin and conjunctiva.

Dose: 1gm every 4 hours.

Topically 0.5% cream or ointment

Nystatin: Is an antifungal substance produced by the growth of streptomyces noursci.

It is an antifungal antibiotic useful in the treatment of dermatophytoses such as :

Athletes food and ringworm. It is important in controlling fungous infection of the buccal and intestinal tract, specifically the {moniliasis} which develop after the administration of broad spectrum antibiotics.

Doses: Oral 500,000 u.s.p. suspension or tablets 3 time a day.

Intra vaginal as: suppositories 100,000 units.

Topically as ointment 1-4 times a day as required.

Mycostatin combinations of Nystatin and wide spectrum antibiotics appear to offer a method of preventing moniliasis and similar intestinal infection.

Kanamycin: It is an antibiotic substance produced by the growth of streptomyces kanamyceticus, it is effective against G+ and G- and acid-fast microorganism. It removes the typhoid organisms from the body in {typhoid carriers}.

Negligible amounts are absorbed from the gastro-intestinal tract.

It is use also for topical preoperative effect on the intestine.

Dose: Is given either orally for intestinal infection and pre-operational or intramuscularly for systemic infection. 1gm I.M. daily.

Gramicidin: Is an antibacterial substances produced by the growth of Bacillus brevis. It effect against G+ cocci, clostridia and Neisseria.

It is mainly bacteriostatic.

It is free from allergenicity and toxicity when applied locally.

Uses: Is employed topically for upper respiratory tract infection otitis media and superficial infection of the mouth, throat, skin.

It is administered topically as a 0.05% solution.

Bacitracin: Is an antibacterial produced by the growth of G+, spore forming organism. Ex. {bacillus subtitis}.

strep and (السيلان الجنسي) gonococci **Uses:** Is employed for local pyogenic infection caused by G+ ..

Dose: I.M. 20,000 units every 8 hours.

Topically as ointment containing 500 units per GM.

It is toxic when given I.M. and this slightly absorbed when given orally.

Gentamicin: Is an antibiotic substance produced by the growth of micromonospora purpurea.

It is resembling that of streptomycin and neomycin. It effect on G- {bactericidal} effects.

It is particularly effective in preventing infection following skin burns and skin grafts. Absorption from gastrointestinal tract is poor but following I.M. injection the drug appears in the blood and in urine.

This antibiotic is a potentially useful in treating infection caused lethal or life-threatening illnesses.

Paromomycin: Is an antibiotic obtained from species of streptomyces rimosus.

Its effect against bacterial dysentery and intestinal amebiasis.

When given orally it is well tolerated.

Uses and dose: Used in treating cases of chronic and acute intestinal amebiasis and bacterial infection.

Usual dose: Oral: **15-25**mg per kg of b.w. per day for **5** day.

Gonad:

The ovaries and testes are exocrine [ova-sperm] as well as endocrine (hormonal) in function, they develop under the influence of anterior pituitary hormones particularly:

- 1- Follicle – Stimulating hormone [F.S.H]. lead to the development of the ovarian follicles for formation of ova and estrogen and to the development of the testes and maturat of spermatozoa.
- 2- Luteinizing hormone [L.H] Necessary to the development of corpora lutea in the ovarian follicles after ovulation to the formation of progesterone by the corpora lutea, and to the production of androgen in the matured testes.

- Androgens male hormone
- Estrogen female hormone

Thyroid gland (ductless gland)

In man consist of two lobes lateral and inferior to the anterior aspect of the larynx to produce a "U" shape structure average (30)gm in weight.

Function:

To mobilize dietary iodine, converting it to an organic compound which is capable of accelerating metabolic processes and is necessary to the development and function of all body cells.

Adult human body contains about [14mg] of [Thyroxine].

This is maintained by the balanced use and production of about (0.33)mg daily.

- Deficiency of Thyroid

1- Simple iodine deficiency results in (simple goiter) an enlargement of the gland considered compensatory to the lack of building material for thyroid hormone.

2- Deficiency of hormone produces varying degrees of:

a- Cretinism (القماءة) in infant, characterized by retarded and abnormal growth, arrested sexual development, mental deficiency, dry skin, fall in metabolic rate

b- Myxedema:

In adult characterized by general lethargy, retarded mental processes, increased body fat, susceptibility to cold and fatigue, cardiac dilation.

Thyroid hyperactivity results in thyro-toxicosis characterized by increasing: - heart rate

- blood pressure
- nervous excitability
- metabolic rate
- muscular weakness with tremor

[loss of body weight and fat]

Treatment of organic hyper thyroidism is principally surgical, aided by iodine and by the use of Thiouracil and its derivatives.

Thyroid الدرقية

Is the cleaned, dried powdered thyroid gland previously deprived of connective tissue and fat. It is obtained from domesticated animals that are used for food by man, which contain not less than (0.17)% and not more than (0.3)% of iodine in thyroid combination.

Uses and does:

Is effective by oral therapy.

Usual dose: 100mg daily.

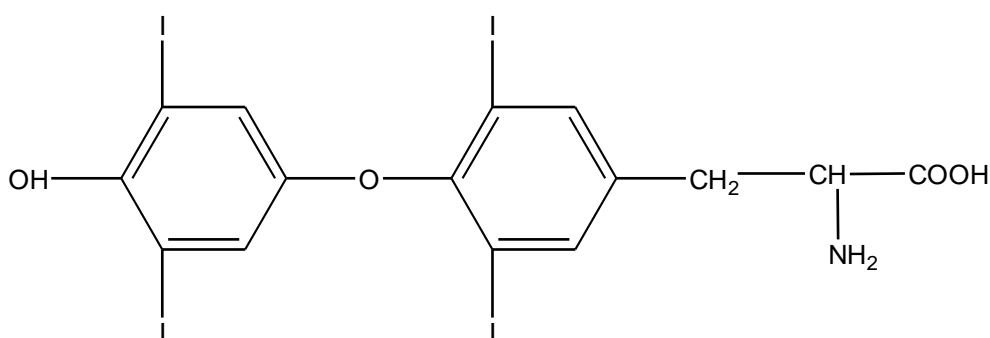
Ex: Thyrar , Proloid

(لا يظهر مفعول العلاج إلا بعد 8 أو 10 أيام)

-Thyroxin-

Is the active principle isolated from the thyroid gland or prepared synthetically and contains not less than 64% absorbed from the intestinal tract and is therefore not satisfactory for oral administration.

It may give (I.V), which is no longer by other compounder.



Uses:

It is used for replacement therapy of reduced or completely absent thyroid function, also in case of sterility or habitual abortion chronic arthritis, skin lesions associated with dryness.

Dose : initial 100mg daily increase as required maintenance 150-400mg.

-Adrenal Glands- الغدة الكظرية

In man comprise a pair of small glands, one situated over the superior medial aspect of each kidney.

Each adrenal consists of two glandular entities.

A- Adrenal medulla

B- Adrenal cortex.

1- Adrenal medulla:

Its hormone: Epinephrine

Which stimulate the sympathetic post-ganglionic structure.

Ot os avaso constrictor and vasopressor acting in general as:

- Sympatho mimetic agent of rapid onset but brief duration of action
- Oral administration of epinephrine is in effective due to in activate in the stomach.
- Adrenal substance is the dried partially defatted and pow dered suprarenal gland of:
 - Cattle
 - Sheep
 - Swine

It is as : - Solution

- inhalation
- inretion
- ophalnie ointment: - Adrenalin
 - Vasodrine

2- Adrenal Cortex:

Is essential to life removed of about 85% of cortical tissue result fatally in few days. Cortical deficiency in animal is marked by a loss of appetite and weight, vomition and diarrhea, weakness, and a fail in temperature metabolizen and blood pressure.

- In human counter part of this deficiency picture is seen in the clinical development of Addison's disease, due to tuber culosry or tumor of the adrenal cortex associated with this disease.

There is degeneration of the (gonads) a marked increase in capillary permeability and an increase sensitivity to insulin .

If untreated addison's disease terminate fatally in (1-3) years due to hypoglycemia

- Excesive adrenal cortical activity as in tumors or due to the presence of accessory cortical tissue result in growth abnormalities in the external genitalia and in the secondary sex characteristics .

Treatment of this case by surgical