

Concept detail

**1. DRUGS –** Drugs are chemical of low molecular masses, which interact with macromolecular targets and produce a biological response.

**2. CHEMOTHERAPY-** The use of chemicals for therapeutic effect is called chemotherapy.

**3. CLASSIFICATION OF DRUGS –**

(a) *ON THE BASIS OF PHARMACOLOGICAL EFFECT*-drugs for a particular type of problem e.g. as analgesics-----for pain relieving.

(b) *ON THE BASIS OF DRUG ACTION*-Action of drug on a particular biochemical process.

(c) *ON THE BASIS OF CHEMICAL ACTION*-Drugs having similar structure .eg- sulpha drugs.

(d) *ON THE BASIS OF MOLECULAR TARGETS*- Drugs interacting with biomolecules as lipids, proteins.

**4. ENZYMES AS DRUG TARGETS**

(i) *CATALYTIC ACTION OF ENZYMES-*

(a) Enzymes have active sites which hold the substrate molecule .it can be attracted by reacting molecules.

(b) Substrate is bonded to active sites through hydrogen bonds, ionic bonds, Vander Waal or dipole –dipole interactions.

(ii) *DRUG- ENZYME INTERACTIONS-*

(a)Drug compete with natural substrate for their attachments on the active sites of enzymes .They are called competitive inhibitors.

(b)Some drugs binds to a different site of the enzyme called allosteric sites which changes the shape of active sites.

**5. ANTAGONISTS-** The drugs that bind to the receptor site and inhibit its natural function.

**6. AGONISTS-**Drugs mimic the natural messenger by switching on the receptor.

**7. ANTACIDS-**These are compounds which neutralize excess acid of stomach.eg- Aluminium hydroxide, Magnesium hydroxide.

**8. ANTI HISTAMINES-**The drugs which interfere with the natural action of histamines and prevent the allergic reaction. eg- rantidine, tegamet, avil.

**9. TRANQUILIZERS-**The class of chemical compounds used for the treatment of stress, mild or even severe mental diseases. Eg- luminal, seconal, equanil, idardil, iproniagid.

**10. ANALGESICS-**They reduce pain without causing impairment of consciousness, mental confusion or some other disturbance of the nervous system.

Eg - aspirin, seridon, phenacetin.

**11. ANTIMICROBIALS**-They tend to prevent/destroy or inhibit the pathogenic action of microbes as bacteria ,virus ,fungi etc. They are classified as

(i)**ANTIBIOTICS**-Those are the chemicals substances which are produced by micro-organisms and use to kill the pathogenic micro-organism.

Eg- Pencillin , ofloxacin .

**NARROW SPECTRUM ANTI-BIOTICS**-These are effective mainly against gram positive or gram negative bacteria. Eg- Penicillin , streptomycin.

**BROAD SPECTRUM ANTI-BIOTICS**-They kill or inhibit a wide range of micro-organisms. eg- chloramphenicol , tetracycline .

(ii)**ANTISEPTICS OR DISINFECTANT**-These are which either kill/inhibit the growth of micro-organisms. Antiseptics are applied to the living tissues such as wounds, cuts, ulcers etc. eg-furacine, chloroxylonol & terpinol (Dettol) .Disinfectant are applied to inanimate objects such as floors , drainage , system.

Eg- 0.2% solution of phenol is an antiseptic while 1% solution is disinfectant.

**12. ANTIFERTILITY DRUGS**- These is the chemical substances used to control the pregnancy. They are also called oral contraceptives or birth control pills.

Eg-Mifepristone, norethindrone.

**13. ARTIFICIAL SWEETNING AGENTS**-These are the chemical compounds which give sweetening effect to the food without adding calorie.

They are good for diabolic people e.g.- aspartame, saccharin, alitame , sucrolose.

**14. FOOD PRESERVATIVES**- They prevents spoilage of food to microbial growth.eg-salt, sugar, and sodium benzoate.

**15. CLEANSING AGENTS**-

(i) **SOAPS**- They is sodium or potassium salts of long chain fatty acids. They are obtained by the saponification reaction, when fatty acids are heated with aqueous sodium hydroxide. They do not work well in hard water.

(iii) **TOILETS SOAP**-This is prepared by using better grade of fatty acids and excess of alkali needs to be removed. colour & perfumes are added to make them attractive.

(iv) **MEDICATED SOAPS**- Substances of medicinal value are added.eg- Bithional, Dettol.

**16. SYNTHETIC DETERGENTS**-They are cleaning agents having properties of soaps, but actually contain no soap .They can used in both soft and hard water .They are-

(i)**ANIONIC DETERGENTS**-They are sodium salts of sulphonated long chain alcohols or hydrocarbons.eg-sodium lauryl sulphonate. They are effective in acidic solution.

$\text{CH}_3(\text{CH}_2)\text{CH}_2\text{OH} \rightarrow \text{CH}_3(\text{CH}_2)_{10}\text{CH}_2\text{OSO}_3\text{H}$

(laurylalchol)  $\rightarrow \text{CH}_3(\text{CH}_2)_{10}\text{CH}_2\text{SO}_3\text{-Na}^+$

(Sodium lauryl sulphonate)

(ii) **CATIONIC DETERGENTS**- They are quaternary ammonium salts of amines with acetates, chlorides, or bromides. They are expensive and used to a limited extent. eg- cetyltrimethylammoniumbromide

(iii) **NON-IONIC DETERGENTS**- They do not contain any ions. Some liquid dishwashing detergents which are of non-ionic type.

**17. BIODEGRADABLE DETERGENTS**- The detergents which are linear and can be attacked by micro-organisms are biodegradable.

Eg -sodium 4-(1-dodecyl) benzene \ sulphonate.

**18. NON-BIODEGRADABLE DETERGENTS**- The detergents which are branched and cannot be decomposed by micro-organisms are called non-biodegradable. eg-sodium 4-(1,3,5,7 tetramethyloctyl)-benzene sulphonate. It creates water pollution.

Activity

To classify the commonly available drugs being used at home.

**Q-1 Define the term chemotherapy?**

**Q-2 why do we require artificial sweetening agents?**

**Q-3 what are main constituent of Dettol?**

**Q-4 what type drug phenacitin?**

**Q-5 Name the drug that are used to control allergy?**

### Formative Assignments

Q-1 Mention one important use of the following-

(i) Equanil (ii) Sucrose

Q-2 Define the following and give one example-

(i) Antipyretics (ii) Antibiotics

Q-3 Name the medicines used for the treatment of the following-

(i) Tuberculosis (ii) Typhoid

Q-4 what are tincture of iodine?

Level Wise Assignments

Level 1

Q-1 What is tranquilizers? Give an example?

Q-2 what type of drug chloramphenicol?

Q-3 Why is bithional is added to the toilet soap?

Q-4 what are food preservatives?

Level 2

Q- 1 What is artificial sweetening agent? Give two examples?

Q-2 How is synthetic detergents better than soaps?

Q-3 what are sulpha drugs? Give two examples?

Q-4 what forces are involved in holding the active sites of the enzymes?

Level 3

Q-1 what are barbiturates? To which class of drugs do they belong? Give two examples.

Q-2 Identify the type of drug-

(i) Ofloxacin (ii) Aspirin (iii) Cimetidine

Q-3 Describe the following with suitable example-

(i) Disinfectant (ii) Analgesics

(iii) Broad spectrum antibiotics

Project

To Collect the information(Amount in Kg) about the monthly use of Poyethene Bags in nearby Shops.