

Unit-16 CHEMISTRY IN EVERYDAY LIFE

POINTS TO BE REMEMBERED

- 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 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 EN ZYMES**-
 - (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 complete 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,tegarnet, avil.
- 9. TRANQUILIZERS**-The class of chemical compounds used for the treatment of stress,mild or even severe mental diseases. Eg-idardil, iproniagid, luminal, second equaquil .
- 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.

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, chloroxylenol & 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 an 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 eg- aspartame, saccharin, alitame , sucralose.

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 soapnification reaction, when fatty acids are heated with aqueous sodium hydroxide.

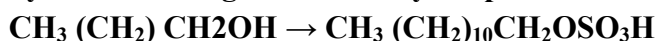
They do not work well in hard water.

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

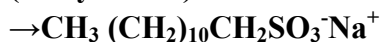
(iv) **MEDICATED SOAPS**- Substances of medicinal value are added.eg- Buthional , dettol.

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.



(laurylalcohol)



(Sodium lauryl sulphonate)

(ii)**CATIONIC DETERGENTS**- They are quarternary ammonium salts of amines with acetates , chlorides, or bromides.They are expensive used tolimited extent.eg- cetyltrimethylammoniumbromide

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

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

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

18. NON-BIODEGREABLE 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.

VERY SHORT ANSWER TYPE QUESTION

(1 marks)

Q-1 Define the term chemotherapy?

Ans-1 Treatment of diseases using chemicals is called chemotherapy.

Q-2 why do we require artificial sweetening agents?

Ans-2 To reduce calorie intake.

Q-3 what are main constituent of Dettol?

Ans-3 Chloroxylenol & Terpinol .

Q-4 what type drug phenacetin is?

Ans-4 It is antipyretics.

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

Ans-5 Antihistamines.

Q-6Why is the use of aspartame limited to cold food and drinks?

Ans-6 It is unstable at cooking temperature and decompose.

Q-7What is tranquilizers? Give an example?

Ans-7 They are the drugs used in stress, mild severe mental disease.

Q-8 what type of drug chloramphenicol?

Ans-8 It is broad spectrum antibiotic.

Q-9Why is biocidal added to the toilet soap?

Ans-9It acts as antiseptics.

Q-10 what are food preservatives?

Ans-10 The substances that prevent spoilage of food due to microbial growth. eg- sodium benzoate.

SHORT ANSWER TYPE QUESTION

(2 marks)

Q-1 Mention one important use of the following-

(i) Equanil

(ii) Sucrose

Ans-1 (i) Equanil- It is a tranquilizer.

(ii) Sucrose-It is an artificial sweetener.

Q-2 Define the following and give one example-

(i) Antipyretics

(ii) Antibiotics

Ans-2 (i) Antipyretics- Those drugs which reduce the temperature of feverish body are called Antipyretics.

Eg - Paracetamol

(ii) **Antibiotics**-The drugs which prevent the growth of other micro-organisms. Eg- Pencillin.

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

(i) Tuberculosis (ii) Typhoid Tuberculosis- Sterptomycin

Typhoid- Chlororophenicol

Q-4 what are tincture of iodine?

Ans-4 2-3% iodine solution of alcohol water is called tincture of Iodine. It is a powerful antiseptics and is applied on wounds.

Q- 5 What is artificial sweetening agent? Give two examples?

Ans-5 The substances which give sweetening to food but don't add calorie to our body .

Eg- Saccharin, alitame.

Q-6 How is synthetic detergents better than soaps?

Ans- 6 (i) Detergents can be used in hard water but soaps cannot be used.

(ii) Detergents have a stronger cleansing action than soaps.

Q-7 what are sulpha drugs? Give two examples?

Ans-7 a group of drugs which are derivatives of sulphanilamide and are used in place of antibiotics is called sulpha drugs.

Eg- sulphadizine, sulphanilamide.

Q-8 what forces are involved in holding the active sites of the enzymes?

Ans-8 The forces are involved in holding the active sites of the enzymes are hydrogen bonding , ionic bonding , dipole-dipole attractions or Vander waals force of attractions.

Q-9 Describe the following giving an example in each

case- (i) Edible colours

(ii) Antifertility drugs

(i) **Edible colours**- They are used for dyeing food.

Eg- saffron is used to colour rice.

(ii) **Antifertility drugs**- Those drugs which control the birth of the child are called antifertility drugs.

Q-10 Give two examples of organic compounds used as antiseptics?

Ans-10 Phenol (0.2%), iodoform

SHORT ANSWER TYPE QUESTION

(3 marks)

Q-1 what are Biodegradable and non-biodegradable detergents? Give one example of each.

Ans-1 Detergents having straight hydrocarbon chain and are easily decomposed by micro-organisms are called **Biodegradable detergents**. The detergents having branched hydrocarbon chain and are not easily decomposed by micro-organisms are called **Non-Biodegradable detergents**.

Q-2 what are barbiturates? To which class of drugs do they belong? Give two examples.

Ans-2 Derivatives of barbituric acid are called barbiturates. They are tranquilizers. They also act as hypnotics. eg- luminal , seconal.

Q-3 what is the use of –

(i) Benadryl (ii) sodium benzoate (iii) Progesterone

Ans-3 (i) Antihistamines

(ii) Preservatives

(iii) Antifertility drug

Q-4 Identify the type of drug-

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

Ans- 4 (i) Antibiotic (ii) Analgesics & Antipyretics

(iii) Antihistamines & antacid

Q-5 Describe the following with suitable example-

(i) Disinfectant (ii) Analgesics

(iii) Broad spectrum antibiotics

(i) Disinfectant- chemicals used to kill the micro-organisms can applied on non living articles.

(ii) Analgesics- They are the drugs which are used to relieve pain . eg – Aspirin , Ibuprofen.

(iii) Broad spectrum antibiotics- They kill the wide range of gram positive and gram negative bacteria.

Eg- Chloramphenicol , ofloxacin.