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Chemistry In Every day life notes.

Drugs: Chemicals which are used for the treatment of diseases or ease the pain are called drugs.

Classification of drugs

1. Based on the pharmacological effect:

All the drugs which cure same type of disease are classified under one class.

eg. 1. Antiseptics used for stopping the infection on the living surface.

2. Analgesic for curing pain.

2. Based on the drug action :-

All the drugs which act on a given biochemical process are kept in one class.

eg many cancer drugs for cancer target different enzymes at in TCA cycle so they can be categorized in one class.

3. Based on chemical structure :-

All the drugs with similar structures are classified under one class.

eg. All the drugs with 'S₁N₁' are classified under sulphadugs.

4. Based on molecular targets :-

All the drugs which target one type of biomolecules are classified under one category.

Drug Interactions:

Drug can show its action by two means

- By interaction with Enzyme.
- By interaction with receptors.

1. By interaction with Enzymes is done in two different manner.

a) Competative interaction: - The drug competes with the usual substrate for interaction with Enzyme to bind at active site thereby stopping inhibiting its activity.

b) Non-competative interaction: - The drug combines at some other site than the active site & changes the configuration of active site thereby inhibiting it from interacting with the substrate.

2. By interaction with receptors: Interaction with the receptors at the cell membrane or plasma membrane leads to the formation of chemical messenger this might start or stop any process which is

happening inside the cell -

- a) If the messenger ~~is~~ increase or start a process inside the cell then it is called as an agonist
- b) If the messenger decreases or stops a process inside the cell then it is called as an antagonist.

Therapeutic actions of different drugs :-

Based on the action they perform the drugs are divided in many types. few of these drugs are enlisted below

1. Antacids :- The chemicals which are used ~~to~~ for soothing the stomach during the excessive production of HCl in it. by either balancing the pH by neutralizing the acid produced or by stopping the production of acid itself.

eg Antacids which act by neutralizing HCl are NaHCO_3 , Mg(OH)_2 , Al(OH)_3 & milk.

Antacids which stop the production of HCl or slow down it are cimetidine, ranitidine, omeprazole & lansoprazole these act on histamine receptors & are preferred during hyperacidity.

2. Tranquilizers :- The chemical substances which are used to cure mental disorders and diseases are categorized under this category. Especially the drugs which deal with anxiety, mood swings, restlessness, ~~and~~ & depression.

eg. Noradrenaline is ipronazid & phenazine are drugs used for depression which metabolize noradrenaline formed.

Barbituric acid & its derivatives veronal, amytal, nembutal, luminal, seconal are used as sleeping ~~product~~ pills.

Equanil Equanil is an antidepressant & hypertension drugs.

Chlorodiazepoxide & meprobamate are hypertension drugs.

3. Analgesic: Which act against the pain.

These drugs can show their action by either increasing the threshold level of pain or by ~~sup~~ suppressing the CNS activity.

Those which suppress the CNS activity are called as narcotics & are addictive.

eg Morphine, codeine, heroin.

Non-narcotics :- They increase the threshold of pain level.

eg. Aspirin, Ibuprofen, ~~thupro~~ Ibuprofen, paracetamol, dichlorofenac sodium, naproxen.

Ointment can also act as analgesic they relieve the pain by increase the heat around the area which is having the pain.

4. Antipyretic :- The drugs which are used to decrease the ~~heat~~ temperature of the body during high fever.

eg. Paracetamol; naproxen, ~~As~~ Aspirin

5. ~~Anti~~ Antimicrobial Drugs :- The drugs which are used to kill or stop the growth of microbes

It is further divided into 3 category.

a. Antibiotics :- The substances which in low concentration inhibit the growth of micro-organisms or destroy by intervening ~~to~~ with their metabolic activities.

Antibiotics are of two types.

1. Bactericidal → killing effect.

eg. Penicillin, ofloxacin, aminoglycosides.

2. Bacteriostatic → stop the growth

eg. ~~ery~~ erythromycin, tetracycline, chloramphenicol.

Based on the type of microbes they can act on

1. Broad spectrum antibiotic

eg. Tetracycline, chloramphenicol.

2. Narrow spectrum antibiotic

eg. Penicillin-G, Ampicillin, Amoxyline.

b. Antiseptic: kill or prevent the growth of microbes on living surface.

eg. Dettol components chloroxylenol & terpineol, Betadine, Tincture iodine.
2-3% I₂ in alcohol, 0.1-0.3% Phenol
Boric acid, CHI₃.

c. Disinfectants: kill or prevent the growth of microbes on nonliving surface

eg. 1% Phenol, 0.2-0.6 ppm Cl₂ in H₂O
SO₂ in very low conc, HCHO.

6. Antifertility Drugs: ~~Dr~~ Controls pregnancy
eg. steroids, norethindrone, estrogen & progesterone mixture.

Chemicals in Foods

1. Artificial sweetening agent :- Substitute natural sugar for diabetic & for losing weight (is removed in wine.)
eg. a. Saccharin 550 times sweeter than cane sugar

b. Aspartame : in cold items unstable at high temp. used for PKU patients.

c. Alitame Highest sweetness index 200 times of cane sugar

d. Sucralose 600 times of cane sugar

e. cyclamate 20 times of cane sugar

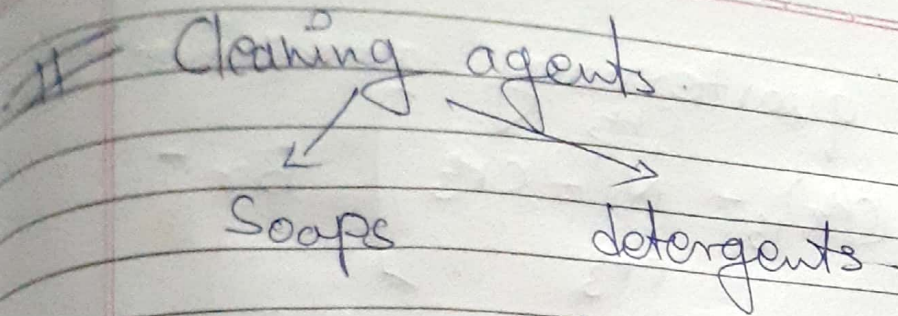
2. Food preservatives :- added to prevent the spoilage due to microbial growth

a. class I preservatives :- Sugar, salt, oil, vinegar, citric acid.

b. class II preservatives :- Sodium benzoate, salt of sorbic acid & propionic acid

3. Antioxidants :- Retard the action of oxygen on food.

eg. BHT, ~~BHA~~ BHA



1. Soaps : K^+ or Na^+ salts of higher fatty acids (containing 15-18 C-atoms)

Types of Soaps

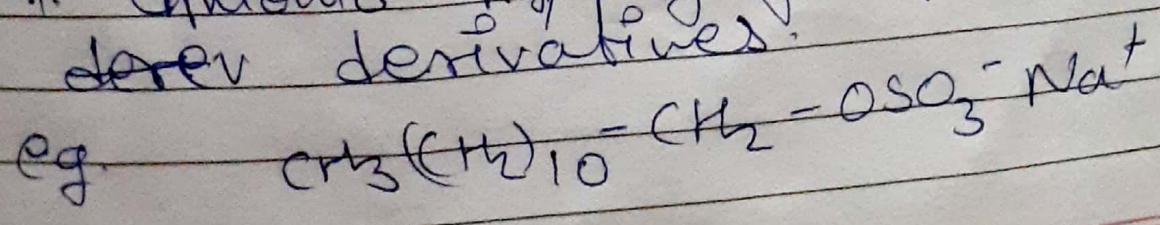
1. Toilet soaps :- Higher grade of fats.
 2. Floating soaps :- In the form of tiny bubbles.
 3. Transparent soaps :- dissolved in C_2H_5OH & evaporated.
 4. Medicated soaps :- Bithional is added to the soap.
 5. Shaving soaps :- Contains glycerol prevent drying.
- ~~Laundry soaps~~ :

2. Detergents. Cleansing agent which doesn't contain fatty acids.

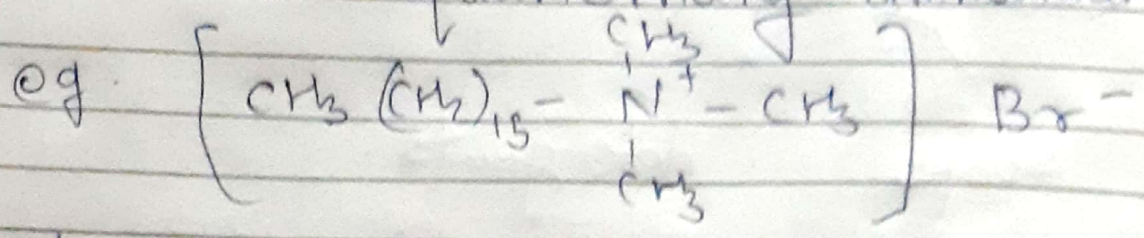
Classification

Based on structure.

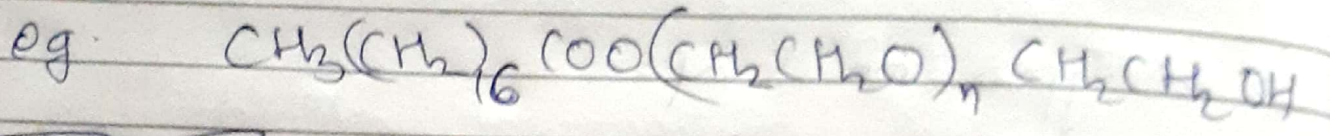
1. Anionic :- ~~any~~ alkyl hydrogen sulphate deriv derivatives.



2. Cationic quaternary ammonium salts



3. Non ionic detergent: contains ester, ether & alcohol alcoholic groups.



~~etc~~ Based on their ability to be acted upon microbes.

