Class XII

DRUGS

CONCEPT MAP

Natural or synthetic substances which when applied on or taken into a living body affect its functioning and is used in the diagnosis, mitigation, treatment or prevention of a disease.

Neurologically Active Drugs

Affect the message transfer mechanism from nerve to receptor. Tranquillizers and analgesics are such type of drugs.

Analgesics

- Used to relieve pain without causing reduction of consciousness, mental confusion or other disturbances of nervous system. These are of two types :

– **Non-narcotics (non-addictive) :** These are not potent and do not cause addiction. *e.g.*, aspirin, paracetamol, etc. They have other effects also such as antipyretic (reducing fever) and anti-blood clotting action.

– **Narcotics (addictive):** Produce analgesia and sleep in small doses but in large doses cause coma, convulsions and may ultimately lead to death *e.g.*, morphine, codeine, etc.

Tranquillizers

- Used for the treatment of stress, fatigue, mild and severe mental diseases by inducing a sense of well being. These are also called *psychotherapeutic drugs e.g.*, chlordiazepoxide and meprobamate.
- An important class of tranquillizers are barbiturates which are used as *hypnotics i.e.*, sleep producing agents *e.g.*, luminal, amytal, etc.

Antihistamines

- Diminish or abolish the effects of histamine released in the body and hence prevent from allergic reactions caused by dust, particular type of food or fabric, etc.
- Commonly used antihistamine drugs are cetrizine, maleate (avil), promethazine, etc.

Antiseptics and Disinfectants

- Antiseptics either kill or inhibit the growth of microorganisms and can be applied to the living tissues but cannot be ingested like antibiotics *e.g.*, soframycine, iodoform, 0.2% solution of phenol, etc.
- Disinfectants also either kill or inhibit the growth of microorganisms but can be applied to inanimate objects only *i.e.*, floors, instruments, etc. *e.g.*, 1% solution of phenol, 0.2-0.4 ppm $Cl_{2(aq.)}$, etc.

Antimicrobials

Destroy/prevent development of microbes or inhibit the pathogenic action of microbes. Antibiotics, antiseptics and disinfectants are *antimicrobials*.

Antibiotics

- Produced wholly or partly by chemical synthesis and in low concentration, either kill (bactericidal drugs) or inhibit the growth of microorganisms (bacteriostatic drugs) by intervening in their metabolic processes.

– **Bactericidal drugs** → Penicillin, ofloxacin, streptomycin, etc.

– **Bacteriostatic drugs** → Erythromycin, tetracycline, chloramphenicol, etc.

- Classification on the basis of range of microorganisms that are affected by a certain antibiotic (called its spectrum of action).

– **Broad spectrum antibiotics** - Kill or inhibit wide range of Gram-positive and Gram-negative bacteria *e.g.*, tetracycline, vancomycine, etc.

– **Narrow spectrum antibiotics** - Kill or inhibit mainly against Gram-positive or Gram-negative bacteria *e.g.*, penicillin G.

- Sulpha drugs (*e.g.*, sulphadiazine, sulphathiazole) are also antibiotics that are used in pneumonia, tuberclosis, etc.

Antifertility Drugs

Used to check pregnancy in women by controlling the menstrual cycle and ovulation *e.g.*, norethindrone, novestrol, etc.

Antacids

- Neutralize the excess acid and raise the pH to an appropriate level in stomach.
- Weak bases like $NaHCO_3$, $Mg(OH)_2$, $CaCO_3$, etc. are commonly used but metal hydroxides are better alternatives as they are insoluble thus, do not increase the pH above neutrality.
- The most effective antacids are omeprazole and lansoprazole.