Chemistry in Everyday Life

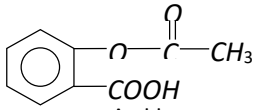
Drugs and Chemotherapy

Drugs may be a single chemical substance or a combination of two or more different substances. An ideal drug should satisfy the following requirements,

Chemicals (drugs) used in chemotherapy are usually classified according to their action.

Antipyretic: Antipyretic is a drug which is responsible for lowering the temperature of feverish body.

Aspirin is an important antipyretic. The other antipyretics are phenacetin, paracetamol, novalgin and phenyl butazone.



Aspirin

Analgesics: Drugs which relieve or decrease pain are termed analgesics.

Antimicrobials: *These are the chemical substances used to cure infections due to micro-organisms. These are also called microbes.* Any organism which causes disease is called ***pathogen***.

Antiseptics and disinfectants

(i) ***Antiseptics*:** The chemical substances which are used to kill or prevent the growth of micro-organisms are called *antiseptics*.

(ii) ***Disinfectants:*** *The chemical substances which are used to kill microorganisms but they cannot be applied on living tissues* are called *disinfectants*. Therefore

Chemicals in Medicines		
Anti-fertility drugs	Birth control	Oral contraceptives, estrogen (ethynylestradiol) and progesterone (norethnidrone), mifepristone.
Antibiotics	Produced by micro-organisms and can inhibit the growth of other micro-organisms.	Penicillin, tetracycline, chloramphenicol, ampicillin, amoxicillin

		Sulpha drugs (sulphanilamide, sulphadiazine, sulphaguanidine)
Antacids	Remove excess acid in stomach	Magnesium hydroxide, magnesium carbonate, magnesium trisilicate, aluminium hydroxide gel, sodium bicarbonate, aluminium phosphate, prazole, lansoprazole.
Analgesics	Relieve pain	Aspirin, ibuprofen, diclofenac sodium, naproxen, narcotics (morphine, codeine, heroin).
Antipyretics	Lower body temperature	Aspirin, paracetamol, phenacetin.
Antiseptics and disinfectants	Kill or prevent the growth of micro-organisms.	0.2% phenol (antiseptic), 1% phenol (disinfectant), chlorine, dettol

		(chloroxylenon and terpeneol), bithional, iodine, boric acid.
Tranquilizers	Treatment of stress, mental diseases	Derivatives of barbituric acid (veronal, amytal, membutal, luminal, seconal), chlordiazepoxide, meprobamate, valium, serotonin.
Antimicrobials	Cure infections due to micro-organisms (microbes)	Antibiotics, Sulphonamides

Chemicals in food

Many chemicals are added to food for their preservation and enhancing their appeal.

(1) **Antioxidants**: Antioxidants are the important and necessary food additives.

(2) **Preservatives**: The preservatives prevent spoilage of food due to microbial growth. The most common preservative used is sodium benzoate, C_6H_5COONa..

(3) **Artificial sweetener**: The artificial sweeteners are another type of food additives. The first popular artificial sweetener was saccharin.

Detergents

. Hard water contains certain metal ions, such as Ca^{2+} and Mg^{2+}. These ions react with soap. (Sodium salts of stearic and similar organic acids), to produce a curdy precipitate of calcium and magnesium salts

Types of detergents

(1) **Anionic detergent**: Long chain alcohols are used in the manufacture of some of the synthetic anionic detergents.

(2) **Cationic detergent**: These are mostly acetates or chlorides of quaternary amines.

(3) **Non-ionic detergent**: Esters of high molecular mass formed by reactions between polyethylene glycol and stearic acid.