

3.1.3.1. Sulphadiazine

Sulfadiazine is a short-acting bacteriostatic and a synthetic pyrimidiny sulfonamide derivative.

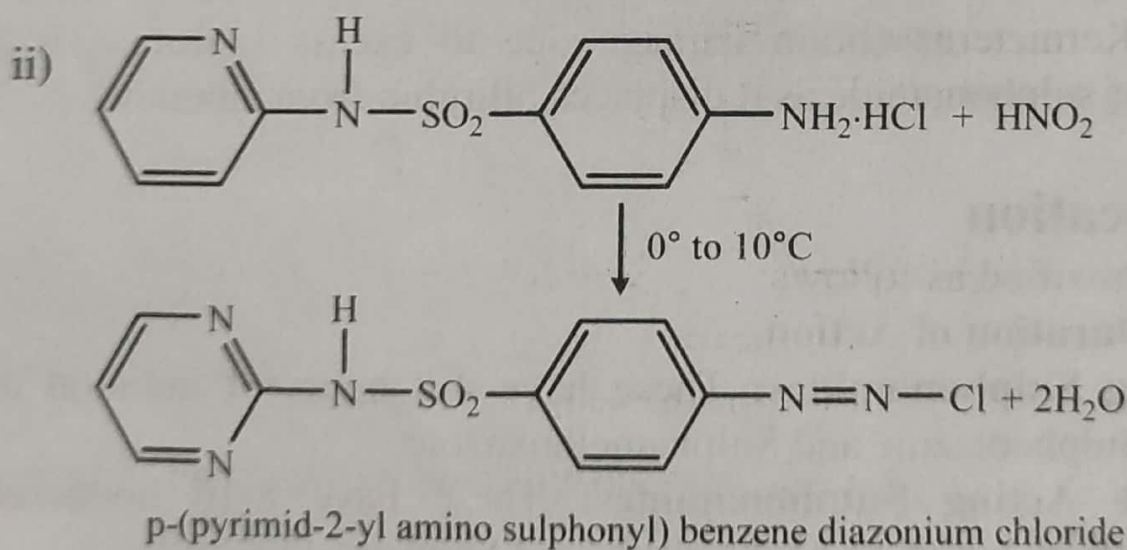
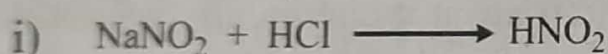
Molecular Formula: $C_{10}H_{10}N_4O_2S$

IUPAC Nomenclature: 4-amino-N-pyrimidin-2-ylbenzenesulfonamide

Physical Properties: Sulfadiazine occurs as a white to slightly yellow coloured crystalline powder. It is soluble in boiling water; faintly soluble in ethanol and acetone; and insoluble in water, chloroform, and ether. It solubilises easily in dilute hydrochloric acid, sodium hydroxide solution, and ammonia solution.

Chemical Properties:

1) **Diazotisation Reaction:** Sulphadiazine undergoes diazotisation and gives a diazo compound on being treated with sodium nitrite in the presence of concentrated hydrochloric acid at $0-10^{\circ}\text{C}$.



2) Sulphadiazine can be identified by the presence of a purple brown coloured precipitate on being dissolved in 0.1N sodium hydroxide and 1% copper sulphate solution.

Uses: Sulphadiazine can be used for the treatment of upper respiratory tract infections, otitis media, *Meningococcal* meningitis, boils carbuncle, puerperal fever, urinary tract infections, acute dysentery, etc. It is also used for treating

infections caused by *Haemolytic streptococcus*, *Meningococcus*, *Pneumococcus*, *Neisseria gonorrhoea*, and *E. coli*.

Stability and Storage Conditions: Sulphadiazine on exposure to light becomes dark, thus should be stored away from light and moisture in well-closed containers at room temperatures ranging between 15-30°C.

Types of Pharmaceutical Formulations: Tablets and creams.

Brand Names: Atrina, Cotrizine, and Trimozin.

3.1.3.2. Sulphaguanidine

Sulphaguanidine (a guanidine derivative of sulphanilamide) is a veterinary medicine. It is suitable for treating dysentery and other enteric infections.

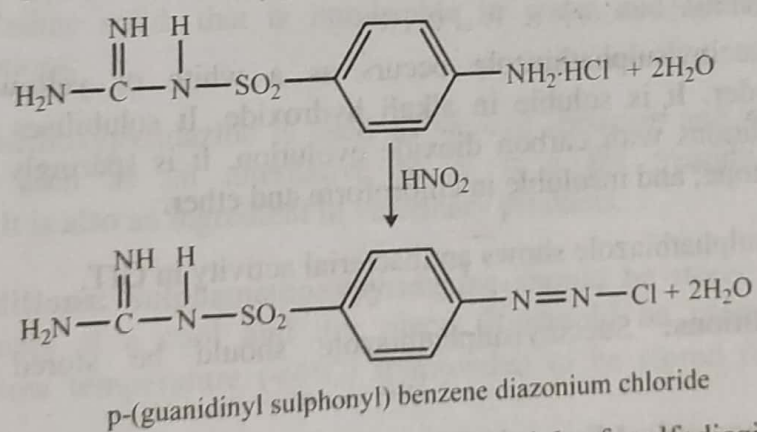
Molecular Formula: $C_7H_{10}N_4O_2S$

IUPAC Nomenclature: 2-(4-aminophenyl) sulfonylguanidine

Properties: Sulphaguanidine occurs as a white, fluffy powder. It is practically insoluble in water.

Chemical Properties: Sulphaguanidine undergoes diazotisation reaction on being treated with sodium nitrite in the presence of concentrated hydrochloric acid at 10°C temperature.

In this reaction, the aromatic primary amino group converts into diazo group.



Uses: Sulphaguanidine is used as a raw material of sulfadiazine drugs, as auxiliary material for other drugs, and for treating bacillary dysentery.

Storage Conditions: Sulphaguanidine should be stored in tightly-closed containers in a dry and well-ventilated place.

Types of Pharmaceutical Formulation: Tablet.

Brand Names: Ganiden, Guanimycin, and Entrogen.

3.1.3.3. Phthalylsulphathiazole

Phthalylsulphathiazole is a broad spectrum antimicrobial agent used for treating various infections including intestinal.

Molecular Formula: $C_{17}H_{13}N_3O_5S_2$

IUPAC

Nomenclature:

2-[[4-(1,3-thiazol-2-ylsulfamoyl)phenyl]carbamoyl]benzoic acid

2-[[4-(1,3-thiazol-2-

Properties: Phthalylsulphathiazole occurs as a colourless, amorphous powder having a characteristic odour.

Uses: Phthalylsulphathiazole is prescribed for treating dysentery, gastrointestinal infection, colitis, and intestinal surgery.

Storage Conditions: Phthalylsulphathiazole should be stored in a cool, moisture-free place, out of the reach of children.

Types of Pharmaceutical Formulation: Tablets.

Brand Names: Diarrocalmol, Ftalasol, and Liracol.

3.1.3.4. Succinylsulphathiazole

N-succinylsulphathiazole is a member of 1, 3-thiazoles and a derivative of sulphathiazole.

Molecular Formula: $C_{13}H_{13}N_3O_5S_2$

IUPAC Nomenclature: 4-oxo-4-[4-(1,3-thiazol-2-ylsulfamoyl)anilino]butanoic acid

Properties: Succinylsulphathiazole occurs as a white or yellow coloured crystalline powder. It is soluble in alkali hydroxide. It solubilises in sodium bicarbonate solutions with carbon dioxide evolution. It is sparingly soluble in alcohol and acetone; and insoluble in chloroform and ether.

Uses: Succinylsulphathiazole shows antibacterial activity in GIT.

Storage Conditions: Succinylsulphathiazole should be stored at room temperature.

Types of Pharmaceutical Formulation: Tablets.

Brand Names: Guanicar, Cremosuxidine, and Kaoxidine.