

#### **4.1.3.1. Clofazimine**

Clofazimine is a phenazine dye exhibiting anti-mycobacterial and anti-inflammatory properties. It is effective for many other *Mycobacteria* and has a slow bactericidal effect on *Mycobacterium leprae*.

**Molecular Formula:**  $C_{27}H_{22}Cl_2N_4$

**IUPAC Nomenclature:** N,5-bis(4-chlorophenyl)-3-propan-2-yliminophenazin-2-amine.

**Properties:** Clofazimine occurs as dark red crystals. It is insoluble in water; and soluble in organic solvents like ethanol, Dimethyl Sulfoxide (DMSO), and Dimethyl Formamide (DMF).

**Uses:** Clofazimine is used for treating various types of leprosy such as lepromatous leprosy, Dapsone-resistant lepromatous leprosy, and lepromatous leprosy complicated by erythema nodosum leprosum.

**Stability and Storage Conditions:** Clofazimine is sensitive to heat and light, thus should be stored at room temperature (between 15-30°C) away from heat light.

**Types of Pharmaceutical Formulations:** Capsule and tablet.

**Brand Names:** Clofaz, Clofozine, and Fazim.

#### 4.1.3.2. Thiambutosine

Thiambutosine is a thiourea derivative, phenolic ether, and a tertiary aromatic amine.

**Molecular Formula:**  $C_{19}H_{25}N_3OS$

**IUPAC Nomenclature:** 1-(4-butoxyphenyl)-3-[4-(dimethylamino)phenyl]thiourea

**Properties:** Thiambutosine occurs as a white or creamy white crystalline powder with a bitter taste and no odour. It has a high solubility in water and acetone.

**Uses:** Thiambutosine is used for treating leprosy especially in Dapsone-resistant patients.

**Storage Conditions:** Thiambutosine should be stored in well-closed containers.

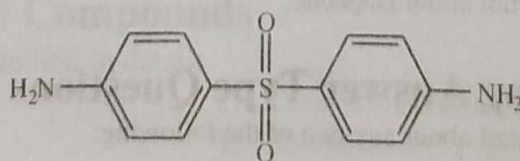
**Types of Pharmaceutical Formulations:** Tablets and intramuscular injections.

**Brand Names:** Siba.

#### 4.1.3.3. Dapsone

Dapsone is a sulfone that is effective for many bacteria but is majorly used against *Mycobacterium Leprae*.

**Chemical Structure**



4,4'-Diaminodiphenylsulphone (Dapsone)

**Molecular Formula:**  $C_{12}H_{12}N_2O_2S$

**IUPAC Nomenclature:** 4-(4-aminophenyl)sulfonylaniline

**Properties:** Dapsone occurs as white or creamy white coloured crystalline powder with a slightly bitter taste and no odour. It is soluble in acetone and dilute mineral acids; slightly soluble in ether; and freely soluble in alcohol.

**Uses:** Dapsone is used for treating leprosy and dermatitis herpetiformis.

**Stability and Storage Conditions:** Dapsone loses its colour when exposed to light, thus it should be stored in air-tight and light-resistant containers at controlled room temperatures (20-25°C or 15-30°C) for a short time period.

**Types of Pharmaceutical Formulations:** Gels and tablets.

**Brand Names:** Avosulfon, Dapson, Diaphenylsulphone, and Dapsone tab.

#### 4.1.3.4. Solapsone

Solapsone is a sulfonamide antibiotic used for treating leprosy.

**Molecular Formula:**  $C_{30}H_{28}N_2Na_4O_{14}S_5$

**IUPAC Nomenclature:** 1-phenyl-3-[4-[4-[(3-phenyl-1,3-disulfonatopropyl)amino]phenyl]sulfonylanilino]propane-1,3-disulfonate

**Properties:** Solapsone occurs as crystals containing 5-7%  $H_2O$ . It becomes anhydrous at 110°C under vacuum. It is very soluble in cold water and gives a neutral solution; and practically insoluble in cold alcohol.

**Uses:** Solapsone acts as a leprostatic.

**Stability:** Solapsone solutions are incompatible with acids.

**Types of Pharmaceutical Formulations:** Intramuscular injections and tablets.

**Brand Names:** Sulphetrone.