



## SULFONAMIDES

Sulphonamides are **synthetic antimicrobial agents** containing **sulphonamide group**.

Sulphonamides are used for preventing and treating **bacterial infections, diabetes mellitus, oedema, hypertension and gout**.

Sulphonamides was the first antimicrobial agent which acted against **pyrogenic bacterial infections**.

Its molecular structure resembles to the structure of **p-Aminobenzoic Acid (PABA)**, required as a substrate of dihydropteroate synthetase enzyme for synthesizing Tetrahydrofolic acid (THF) in bacteria. **Metabolic processes in bacteria requiring PABA are inhibited** by the sulphonamides derived from sulphanilamide.

### CLASSIFICATION:

#### Based on their duration of action:

##### Short acting Sulphonamides:

Duration of action – 4 to 8 hours

Sulphadiazine, Sulphamethoxazole

##### Intermediate acting Sulphonamides:

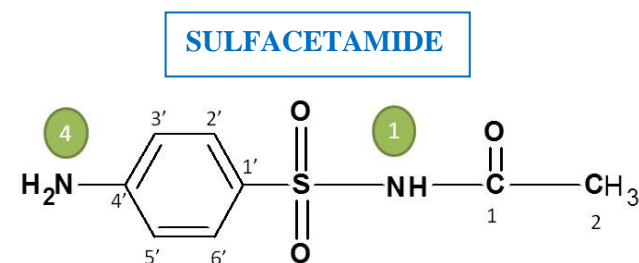
Duration of action – 8 to 16 hours

Sulphaphenazole, Sulphamethoxazole

##### Long acting Sulphonamides:

Duration of action – 1 to 7 hours

Sulphaphenazole, Sulphadimethoxine



**N – [(4-aminophenyl) sulfonyl] acetamide**



**4-(4-Aminophenylsulfonyl)benzenamine**



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## Based on their Pharmacological action:

Used in systemic infections : Sulphadiazine

Used in eye infections : Sulphacetamide

Used in intestinal infections : Sulphapyridine

Used in urinary tract infections: Sulphamethoxazole

DRUG	MECHANISM OF ACTION	USES	STORAGE CONDITIONS	TYPES OF FORMULATIONS	BRAND NAMES
<b>Sulfanilamide</b>	Competitively inhibits bacterial dihydropteroate synthetase enzyme and prevent its replication	To treat vaginal infections	Room temperature	Cream	AVC Vaginal
<b>Sulfadiazine</b> Short acting bacteriostatic Synthetic pyrimidinyl sulfonamides	Competitively inhibits bacterial dihydropteroate synthetase enzyme and prevent its replication	To treat upper respiratory tract infections, otitis media, meningitis, boils carbuncle, puerperal fever, urinary tract infections, acute dysentery.	20-25°C	Tablets	Sulfadiazine Sulfaloid
<b>Sulfamethoxazole</b>	Competes with PABA for binding with dihydro folate synthetase (intermediate of THF synthesis) and inhibits bacterial growth.	To treat bacterial infections causing bronchitis, prostatitis and urinary tract infections.	20-25°C	Tablet Suspension	Bactrim Bactrim DS



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DRUG	MECHANISM OF ACTION	USES	STORAGE CONDITIONS	TYPES OF FORMULATIONS	BRAND NAMES
<b>Sulfacetamide</b>	Competitive inhibitor of PABA which is essential for bacterial growth.	To treat bacterial vaginitis, keratitis, acute conjunctivitis, blepharitis & urinary tract infections	Store in refrigerator	Solution Suspension Emulsion	Avar Bleph-10 Blephamide
<b>Mafenide acetate</b>	Not known Reduces bacterial population in avascular burn tissue and promote healing of deep burns.	To control bacterial infection.	20-25°C	Solution	Sulfamylon
<b>Cotrimoxazole</b> Combination of Sulfamethoxazole and Trimethoprim	Sulfamethoxazole component inhibits the formation of DHF from PABA Trimethoprim component inhibits dihydrofolate reductase. Thus, Cotrimoxazole inhibits folic acid synthesis and synthesis of nucleic acids.	To treat bacterial infections.	15-25°C	Tablets Suspension Syrup	Cotrimox Trimox
<b>Dapsone</b>	Competes with PABA for binding with dihydropteroate synthetase	To treat dermatitis herpetiformis, leprosy and malaria.	20-25°C	Gel	Aczone