

Chapter-8 | P. Chemistry

Diuretics

In Syllabus:

Study of the following category of medicinal compounds with respect to classification, chemical name (IUPAC Name), chemical structure (compounds marked with*) uses, stability and storage conditions, different types of formulations and their popular brand names:

Diuretics

Acetazolamide, Frusemide*, Bumetanide, Chlorthalidone, Benzthiazide, Metolazone, Xipamide, Spironolactone

Diuretics:

- A diuretic is a type of drug that increases the production of urine. They are used to treat a variety of conditions, including high blood pressure, edema, and heart failure.
- Diuretics work by blocking the absorption of sodium in the kidneys, which causes the body to excrete more water.

Classification of Diuretics:

- Thiazide diuretics: Chlorothiazide (Diuril), Hydrochlorothiazide (Microzide), and Metolazone (Zaroxolyn)
- Loop diuretics: Furosemide (Lasix), Bumetanide (Bumex), and Torasemide (Demadex)
- Potassium-sparing diuretics: Spironolactone (Aldactone), Amiloride (Midamor), and Triamterene (Dyrenium)
- Osmotic diuretics: Mannitol (Osmitrol) and Urea (Ureaphil)
- Carbonic anhydrase inhibitors: Acetazolamide (Diamox) and Methazolamide (Neoral)



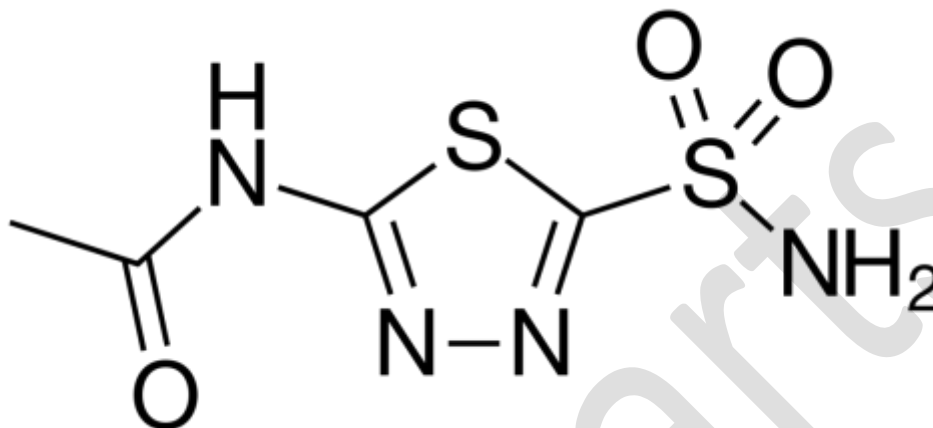
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Acetazolamide:

Chemical Name: N-(5-Sulfamoyl-1,3,4-thiadiazol-2-yl)acetamide

Chemical Structure:



Uses:

- Acetazolamide is a diuretic medication that treats swelling caused by heart disease.
- It works by helping your body make more pee so you can lose salt and excess water from your body.
- It can also treat seizures, certain types of glaucoma and prevent symptoms of altitude sickness.

Stability and storage conditions:

- It should be kept in a cool, dry place and stored at room temperature. Direct sunlight is prohibited.

Types of formulations:

- Tablets
- Capsule
- Eye Drops

Popular brand names:

- Diamox



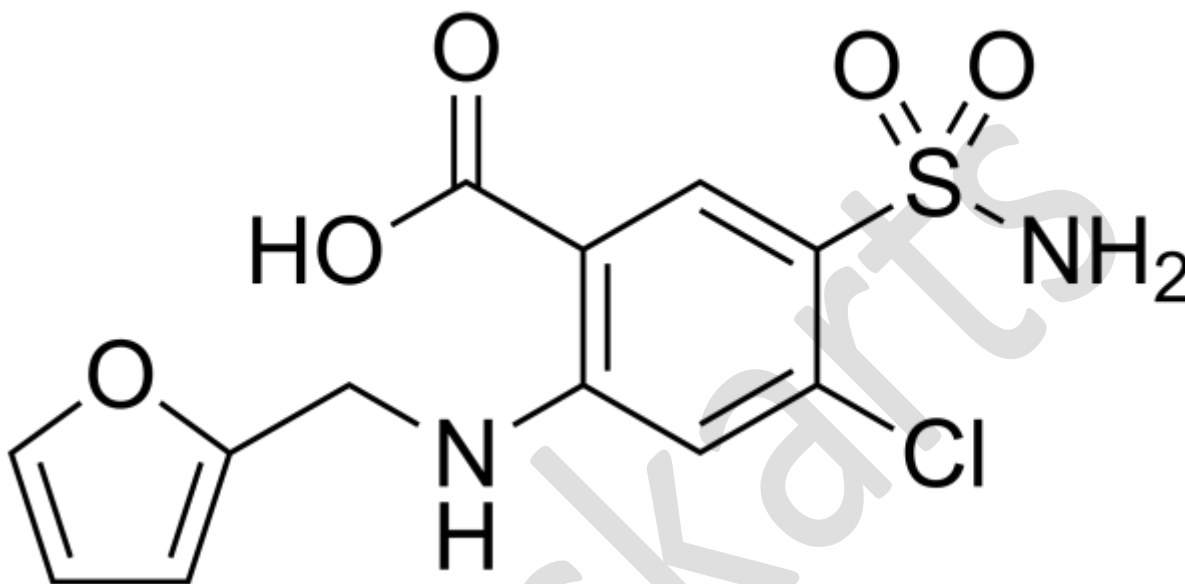
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Frusemide*

Chemical Name: 4-Chloro-2-[(furan-2-ylmethyl)amino]-5-sulfamoylbenzoic acid

Chemical Structure:



Uses:

- Furosemide is given to help treat fluid retention (edema) and swelling that is caused by congestive heart failure, liver disease, kidney disease, or other medical conditions.
- It works by acting on the kidneys to increase the flow of urine.

Stability and storage conditions:

- It should be kept in a cool, dry place and stored at room temperature. Direct sunlight is prohibited.

Types of formulations:

- Tablets
- Capsule

Popular brand names:

- Lasix



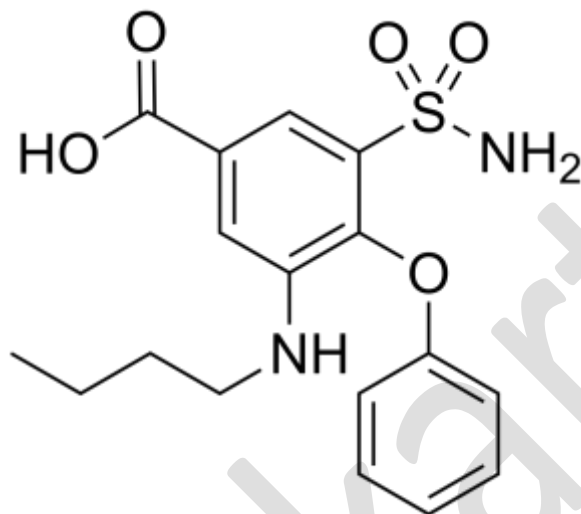
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Bumetanide

Chemical Name: 3-butylamino-4-phenoxy-5-sulfamoyl-benzoic acid

Chemical Structure:



Uses:

- Bumetanide is used to treat edema (fluid retention; excess fluid held in body tissues) caused by various medical problems, including heart, kidney, and liver disease.

Stability and storage conditions:

- It should be kept in a cool, dry place and stored at room temperature. Direct sunlight is prohibited.

Types of formulations:

- Tablets
- Capsule
- Injection

Popular brand names:

- Bumex



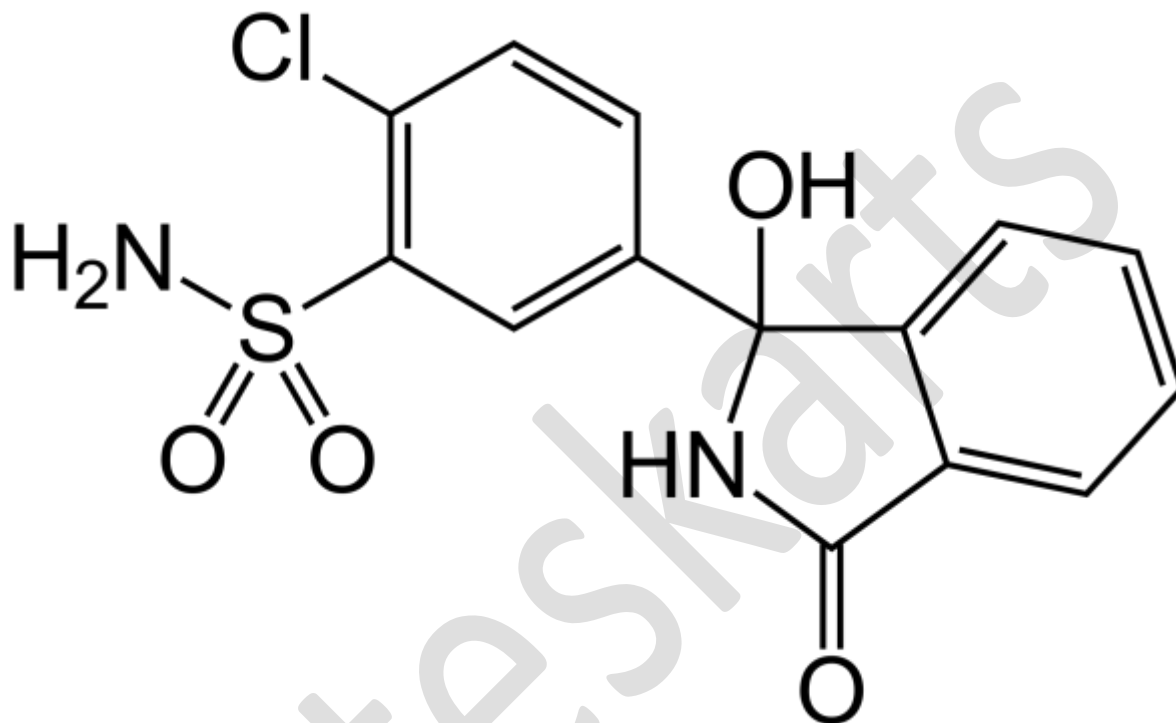
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Chlorthalidone

Chemical Name: (RS)-2-Chloro-5-(1-hydroxy-3-oxo-2,3-dihydro-1H-isoindol-1-yl)benzene-1-sulfonamide

Chemical Structure:



Uses:

- Chlorthalidone is used alone or together with other medicines to treat high blood pressure (hypertension).
- High blood pressure adds to the workload of the heart and arteries.

Stability and storage conditions:

- It should be kept in a cool, dry place and stored at room temperature. Direct sunlight is prohibited.

Types of formulations:

- Tablets
- Capsule

Popular brand names:

- Thalitone



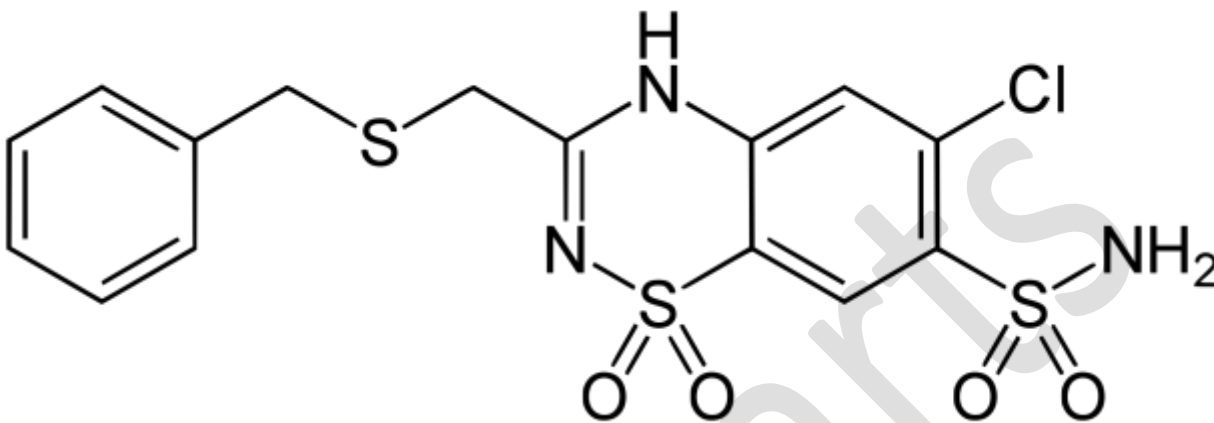
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Benzthiazide

Chemical Name: 7-Sulfamoyl-1,2,4-benzothiadiazine 1,1-dioxide

Chemical Structure:



Uses:

- Benzthiazide is used in Hypertension (high blood pressure). It treats oedema (fluid overload) associated with heart, liver, kidney or lung disease.
- Benzthiazide is a thiazide diuretic.
- It lowers blood pressure and fluid retention in edema by removing the extra water and certain electrolytes from the body.

Stability and storage conditions:

- It should be kept in a cool, dry place and stored at room temperature. Direct sunlight is prohibited.

Types of formulations:

- Tablets
- Capsule

Popular brand names:

- Aquatag
- Dihyrex
- Diucen



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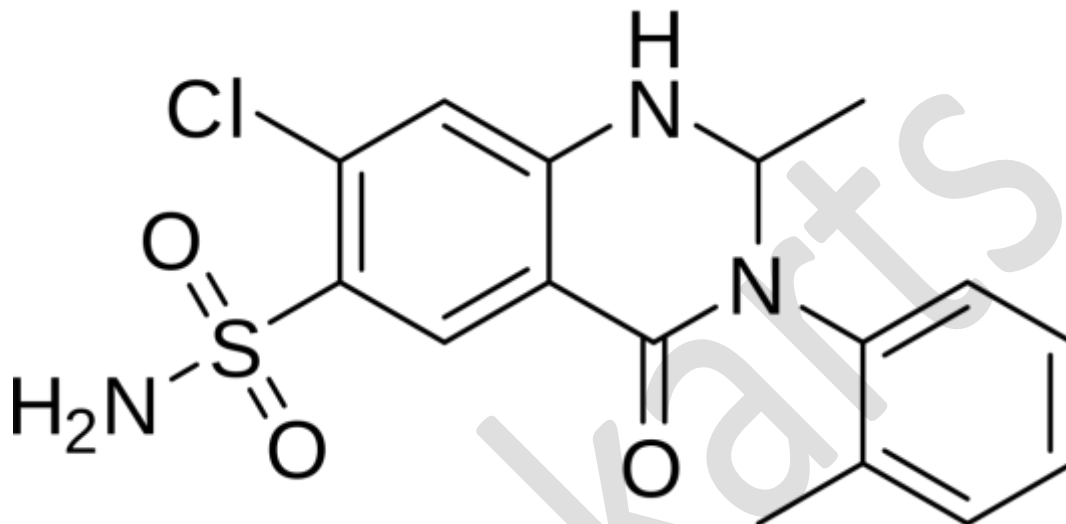
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Metolazone

Chemical Name:

- 7-chloro-2-methyl-4-oxo-3-o-tolyl-1,2,3,4-tetrahydroquinazoline-6-sulfonamide

Chemical Structure:



Uses:

- Metolazone, is used to reduce the swelling and fluid retention caused by heart failure or kidney disease.
- It also is used alone or with other medications to treat high blood pressure.

Stability and storage conditions:

- It should be kept in a cool, dry place and stored at room temperature. Direct sunlight is prohibited.

Types of formulations:

- Tablets
- Capsule

Popular brand names:

- Zytanix
- Metoz



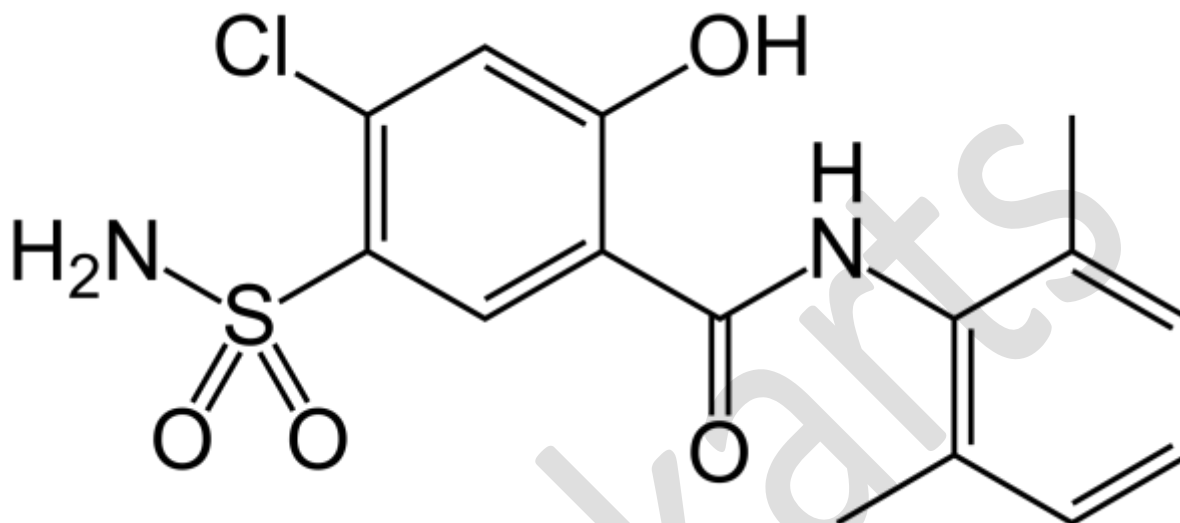
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Xipamide

Chemical Name: 4-chloro-N-(2,6-dimethylphenyl)-2-hydroxy-5-sulfamoylbenzamide

Chemical Structure:



Uses:

- Xipamide is used in Hypertension (high blood pressure).
- It treats oedema (fluid overload) associated with heart, liver, kidney or lung disease.
- Xipamide is a thiazide diuretic. It lowers blood pressure and fluid retention in edema by removing the extra water and certain electrolytes from the body.

Stability and storage conditions:

- It should be kept in a cool, dry place and stored at room temperature. Direct sunlight is prohibited.

Types of formulations:

- Tablets
- Capsule

Popular brand names:

- Aquaphor



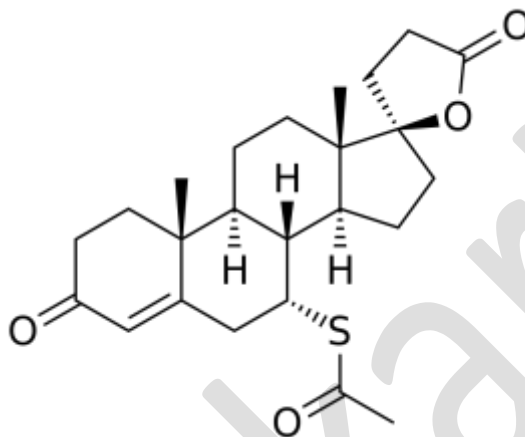
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Spironolactone

Chemical Name: S-[(7R,8R,9S,10R,13S,14S,17R)-10,13-Dimethyl-3,5'-dioxospiro[2,6,7,8,9,11,12,14,15,16-decahydro-1H-cyclopenta[a]phenanthrene-17,2'-oxolane]-7-yl] ethanethioate

Chemical Structure:



Uses:

Spironolactone is used to treat certain patients with hyperaldosteronism (the body produces too much aldosterone, a naturally occurring hormone); low potassium levels; heart failure; and in patients with edema (fluid retention) caused by various conditions, including liver, or kidney disease.

Stability and storage conditions:

- It should be kept in a cool, dry place and stored at room temperature. Direct sunlight is prohibited.

Types of formulations:

- Tablets
- Capsule

Popular brand names:

- Aldactone

