Chapter-11 | P. Chemistry

Anti-Infective Agents

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:

Anti-Infective Agents:

Anti-infective agents are medicines that work to prevent or treat infections.

These agents work by either killing the infectious organisms (microbicidal) or inhibiting their growth and reproduction (microbistatic), thereby controlling or eliminating the infection.

- **Antifungal Agents:** Amphotericin-B, Griseofulvin, Miconazole, Ketoconazole*, Itraconazole, Fluconazole*, Naftifine Hydrochloride
- **Urinary Tract Anti-Infective Agents:** Norfloxacin, Ciprofloxacin, Ofloxacin*, Moxifloxacin,
- **Anti-Tubercular Agents:** INH*, Ethambutol, Para Amino Salicylic Acid, Pyrazinamide, Rifampicin, Bedaquiline, Delamanid, Pretomanid*
- **Antiviral Agents:** Amantadine Hydrochloride, Idoxuridine, Acyclovir*, Foscarnet, Zidovudine, Ribavirin, Remdesivir, Favipiravir
- **Antimalarials:** Quinine Sulphate, Chloroquine Phosphate*, Primaquine Phosphate, Mefloquine*, Cycloguanil, Pyrimethamine, Artemisinin
- **Sulfonamides:** Sulfanilamide, Sulfadiazine, Sulfamethoxazole, Sulfacetamide*, Mafenide Acetate,Cotrimoxazole, Dapsone*

Antifungal Agents:

- Antifungal agents are drugs that kill or inhibit the growth of fungi.
- They are used to treat a variety of fungal infections, including ringworm, athlete's foot, jock itch, candidiasis (yeast infection), and more serious infections such as cryptococcal meningitis and candidemia.

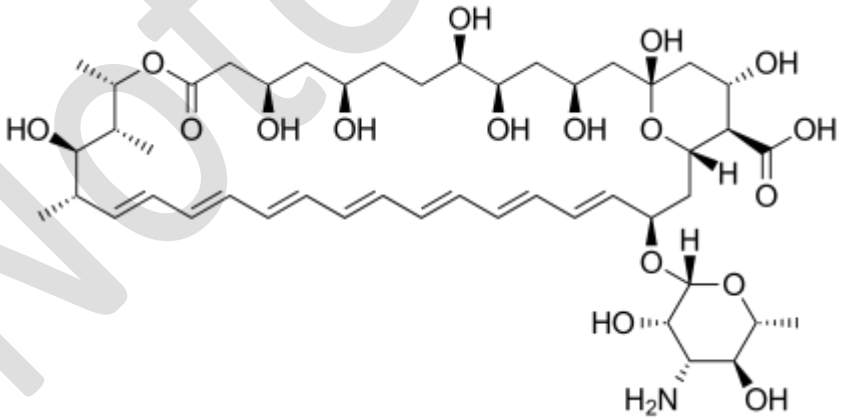
Classification of Antifungal Agents:

Polyenes	**Nystatin, amphotericin B**
Azoles	Fluconazole, itraconazole, voriconazole
Allylamines	Terbinafine, naftifine
Echinocandins	Caspofungin, anidulafungin, micafungin

Amphotericin-B,

Chemical Name: Fungizone

Chemical Structure:



Uses:

Amphotericin B is an antifungal agent that is used to treat a variety of fungal infections, including:

- Cryptococcal meningitis
- Histoplasmosis

- Coccidioidomycosis
- Aspergillosis

Stability and storage Condition:

It is a stable drug that can be stored at room temperature. However, it should be protected from light and moisture.

Type of Formulation:

- Intravenous solution
- Liposomal formulation
- Inhaled formulation

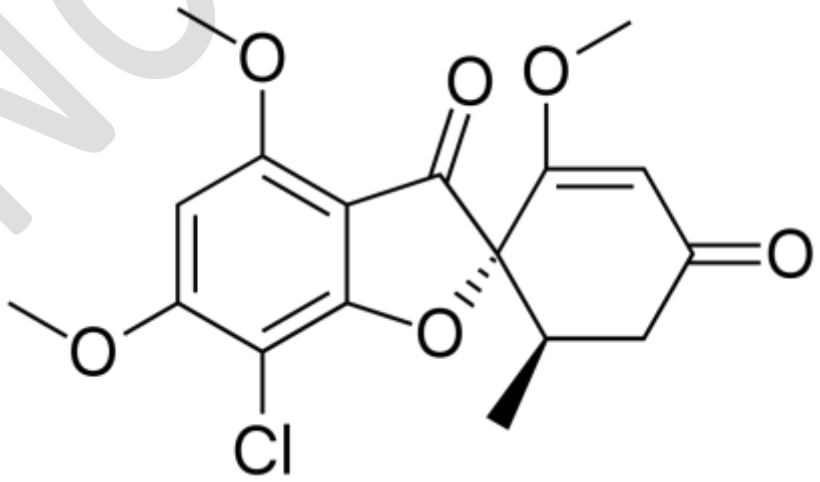
Brand name:

- Fungizone
- Abelcet
- AmBisome

Griseofulvin,

Chemical Name: 7-chloro-2′,4,6-trimethoxy-6′-methylspiro[benzofuran-2(3H),1′-[2]-cyclohexen]-3′,4-dione

Chemical Structure:



Uses:

- Griseofulvin is an antifungal agent that is used to treat a variety of fungal infections, including ringworm, athlete's foot, jock itch, and onychomycosis (nail fungus).
- It is also used to prevent recurrence of ringworm in people who have had the infection in the past.

Stability and storage Condition:

It is a stable drug that can be stored at room temperature. However, it should be protected from light and moisture.

Type of Formulation:

- Oral tablets
- Capsules, and liquid suspension.

Brand name:

- Fulvicin
- Grisactin
- Griseofulvin Microsize

Miconazole

Chemical Name: 1-[2-(2,4-dichlorobenzyloxy)-2-(2,4-dichlorophenyl)ethyl]imidazole

Uses:

Miconazole is an antifungal medication that is used to treat a variety of fungal infections, including:

- Vulvovaginal candidiasis (yeast infection)
- Jock itch
- Ringworm
- Athlete's foot

Stability and storage Condition:

- It is a stable drug that can be stored at room temperature. However, it should be protected from light and moisture.

Type of Formulation:

- Cream
- Gel
- Lotion

- Powder
- Spray
- Vaginal cream
- Oral gel

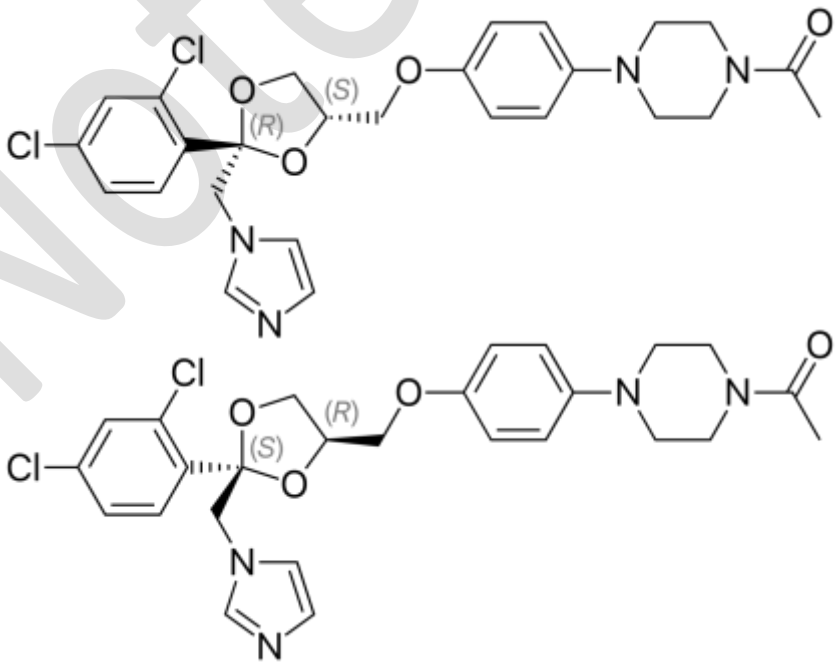
Brand name:

- Monistat
- Daktarin
- Femizol-M
- Miconazol
- Priconazole

Ketoconazole*

Chemical Name: cis-1-acetyl-4-[4-[2-(2,4-dichlorophenyl)-2-(1H-imidazole-1-ylmethyl)-1,3-dioxolan-4-ylmethyl]phenyl]piperazine

Chemical Structure:



Uses:

- Ketoconazole is an antifungal medicine. It's used to treat skin infections caused by a fungus (yeast).

Stability and storage Condition:

- It is a stable drug that can be stored at room temperature. However, it should be protected from light and moisture.

Type of Formulation:

- Oral tablets
- Topical cream
- Topical shampoo
- Oral suspension

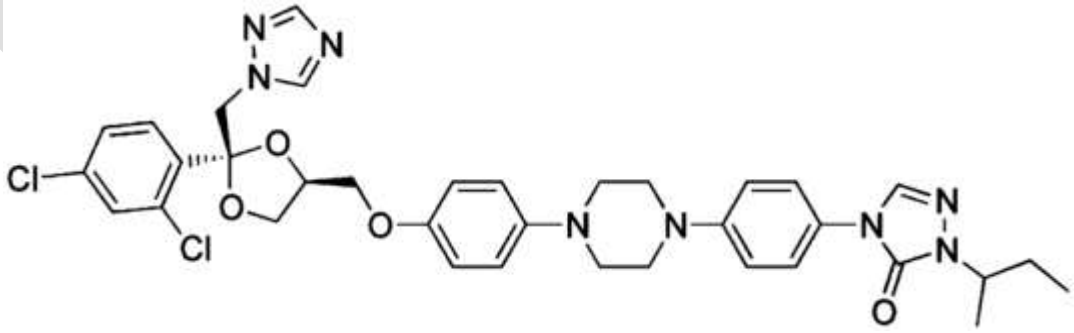
Brand name:

- Nizoral
- Xolegel
- Ketozole

Itraconazole

Chemical Name: 1-(2-(2,4-dichlorophenyl)-2-(1H-imidazol-1-ylmethyl)-1H-benzimidazole.

Chemical Structure:



Uses: Itraconazole is used to treat a variety of fungal infections, including:

- Aspergillosis
- Blastomycosis

- Coccidioidomycosis
- Histoplasmosis
- Paracoccidioidomycosis
- Onychomycosis (fungal infection of the fingernails or toenails)

Stability and storage Condition:

- It is a stable drug that can be stored at room temperature. However, it should be protected from light and moisture.

Type of Formulation:

- Capsules
- Oral solution
- Intravenous solution
- Vaginal cream

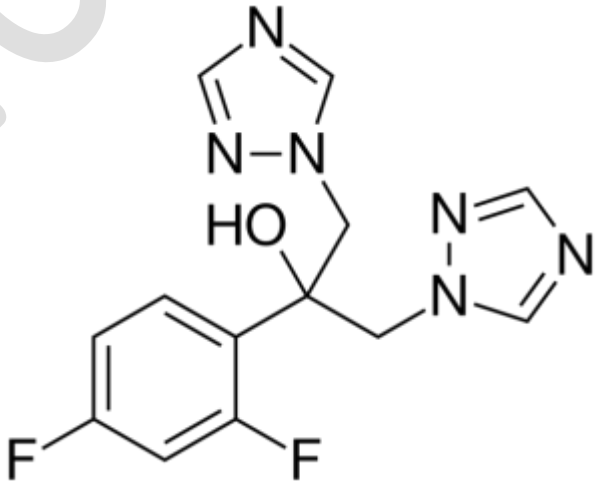
Brand name:

- Sporanox
- Onmel
- Tolsura

Fluconazole*

Chemical Name: 2-(2,4-Difluorophenyl)-1,3-bis(1H-1,2,4-triazol-1-yl)propan-2-ol

Chemical Structure:



Uses:

Fluconazole is an antifungal drug used to treat a variety of fungal infections, including:

- Candidiasis (yeast infection)
- Cryptococcosis (fungal infection of the brain)
- Coccidioidomycosis (fungal infection of the lungs)
- Histoplasmosis (fungal infection of the lungs)

Stability and storage Condition:

- Fluconazole is stable at room temperature. It should be stored in a cool, dry place, away from direct sunlight.

Type of Formulation:

- Oral tablets
- Oral capsules
- Oral suspension
- Intravenous solution

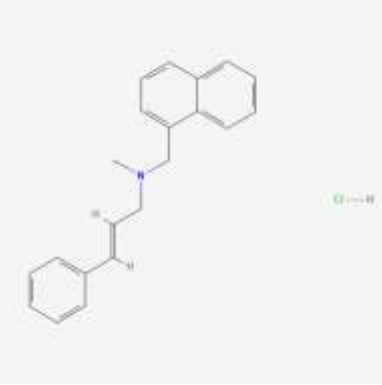
Brand name:

- Diflucan,
- Trican
- Flucozole

Naftifine Hydrochloride

Chemical Name: (E)-N-methyl-N-(naphthalen-1-ylmethyl)-3-phenylprop-2-en-1-amine;hydrochloride

Chemical Structure:



Uses:

- Naftifine hydrochloride is used for the topical treatment of tinea pedis (athlete's foot), tinea cruris (jock itch), and tinea corporis (ringworm).
- It is also sometimes used to treat other fungal skin infections

Stability and storage Condition:

- It is stable at room temperature. It should be stored in a cool, dry place, away from direct sunlight.

Type of Formulation:

- Cream
- Gel

Brand name:

- Naftin

Urinary Tract Anti-Infective Agents:

- Urinary tract anti-infective agents (UTIAs) are drugs that are used to prevent or treat urinary tract infections (UTIs). UTIs are infections of the urinary tract, which includes the kidneys, bladder, ureters, and urethra.
- UTIs are most commonly caused by bacteria, but they can also be caused by viruses or fungi.
- UTIAs work by killing or preventing the growth of bacteria, viruses, or fungi that cause UTIs.

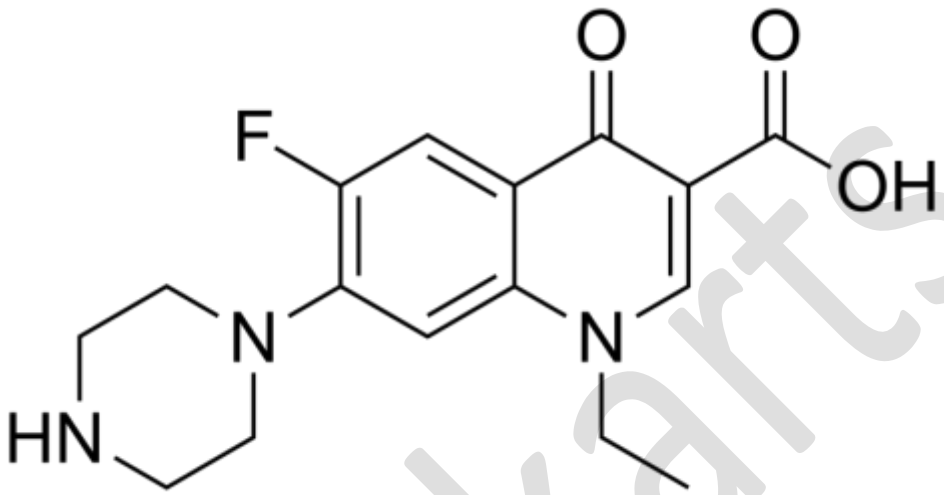
Example:

- Norfloxacin,
- Ciprofloxacin,
- Ofloxacin*,
- Moxifloxacin,

Norfloxacin:

Chemical Name: 1-ethyl-6-fluoro-4-oxo-7-piperazin-1-yl-1H-quinoline-3-carboxylic acid

Chemical Structure:



Uses:

- Norfloxacin is used to treat a variety of bacterial infections.
- This medication belongs to a class of drugs known as quinolone antibiotics.
- It works by stopping the growth of bacteria. This antibiotic treats only bacterial infections.
- It will not work for viral infections (such as common cold, flu).

Stability and storage Condition:

- It is stable at room temperature. It should be stored in a cool, dry place, away from direct sunlight.

Type of Formulation:

- Tablet

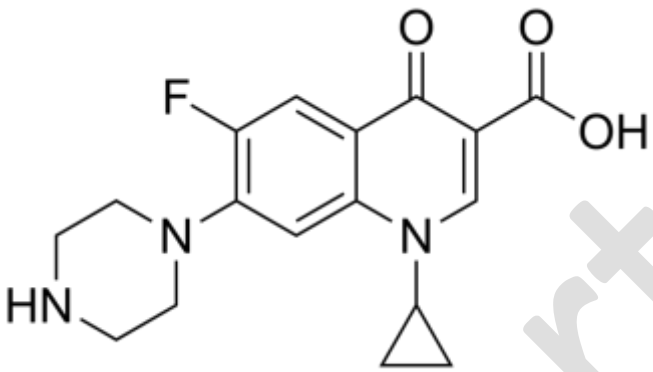
Brand name:

- Noroxin

Ciprofloxacin

Chemical Name: 1-cyclopropyl-6-fluoro-4-oxo-7-piperazin-1-ylquinoline-3-carboxylic acid

Chemical Structure:



Uses:

Ciprofloxacin is a broad-spectrum antibiotic which means that it's used to treat a number of bacterial infections, such as:

- Uncomplicated urinary tract infections (utis) where other antibiotics are not suitable and complicated utis.
- Chest infections (including pneumonia)
- Skin and bone infections.

Stability and storage Condition:

- It is stable at room temperature. It should be stored in a cool, dry place, away from direct sunlight.

Type of Formulation:

- Tablet

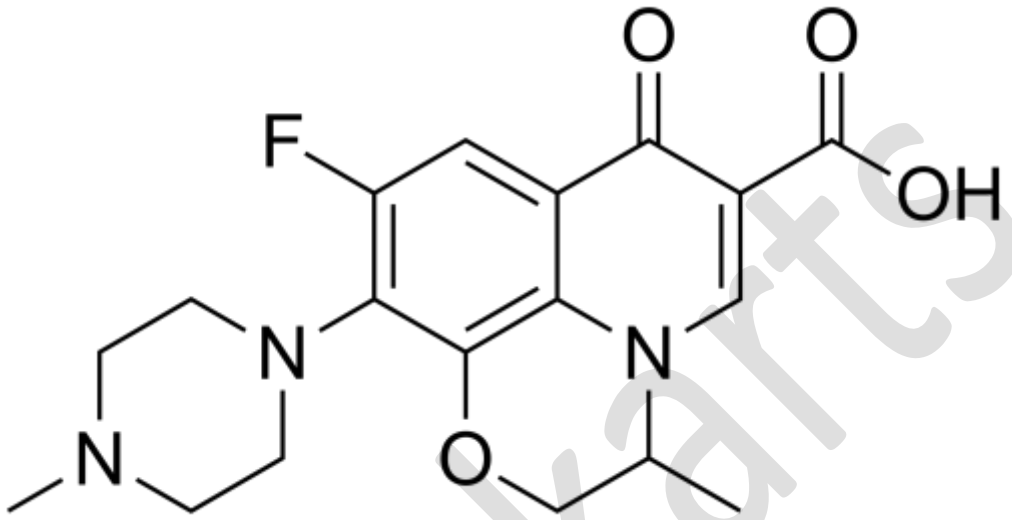
Brand name:

- Ciproxin
- Ciloxan
- Cetraxal

Ofloxacin*

Chemical Name: (RS)-7-fluoro-2-methyl-6-(4-methylpiperazin-1-yl)-10-oxo-4-oxa-1-azatricyclo

Chemical Structure:



Uses:

Ofloxacin is used to treat certain infections including pneumonia, and infections of the skin, bladder, reproductive organs, and prostate (a male reproductive gland).

Stability and storage Condition:

- It is stable at room temperature. It should be stored in a cool, dry place, away from direct sunlight.

Type of Formulation:

- Tablet
- Suspension

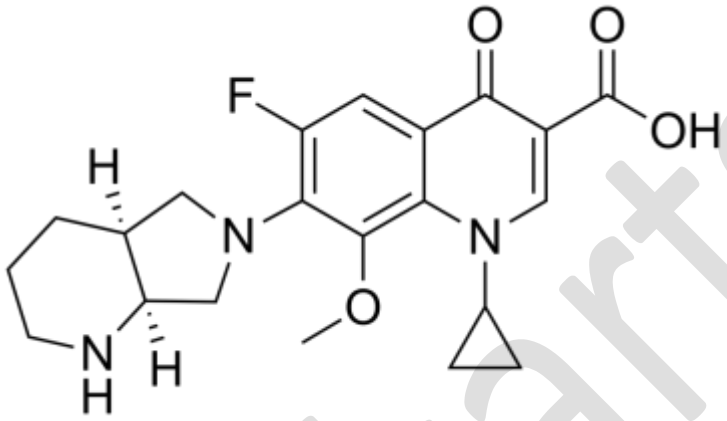
Brand name:

- alproxen tab,
- ARROW susp

Moxifloxacin

Chemical Name: 1-Cyclopropyl-7-[(1S,6S)-2,8-diazabicyclo[4.3.0]nonan-8-yl]-6-fluoro-8-methoxy-4-oxoquinoline-3-carboxylic acid

Chemical Structure:



Uses:

- Moxifloxacin is an antibiotic, used to treat bacterial infections including pneumonia, conjunctivitis, endocarditis, tuberculosis, and sinusitis.

Stability and storage Condition:

- It is stable at room temperature. It should be stored in a cool, dry place, away from direct sunlight.

Type of Formulation:

- Tablet

Brand name:

- Avelox

Anti-Tubercular Agents:

Anti-tubercular agents are a class of drugs used to treat tuberculosis (TB). TB is a contagious disease caused by bacteria called Mycobacterium tuberculosis, which usually affects the lungs but can also affect many other organ systems.

Classification of Anti-Tubercular Agents:

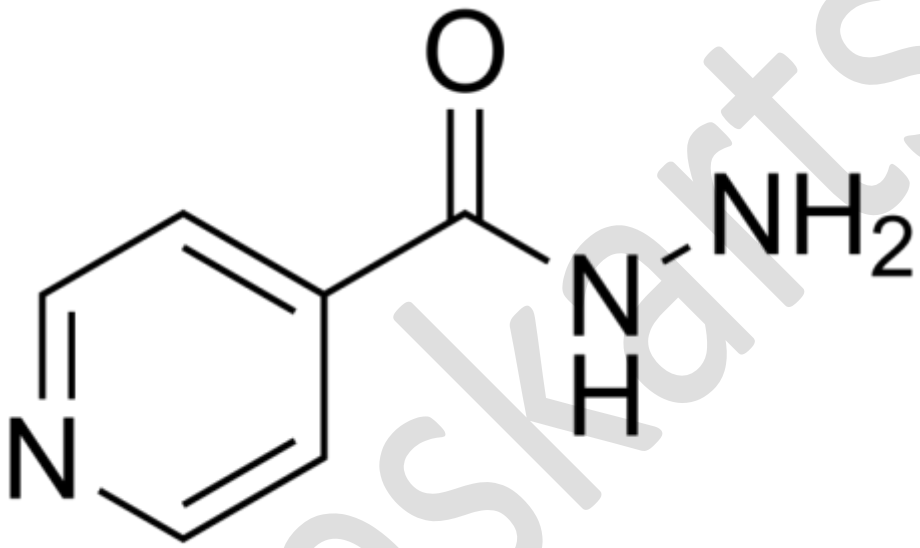
1. **First-line anti-tubercular agents include:**
    - Isoniazid (INH)
    - Rifampin (RIF)
    - Pyrazinamide (PZA)
    - Ethambutol (EMB)
    - Streptomycin (SM)
2. **Second-line anti-tubercular agents include:**
    - Kanamycin
    - Capreomycin
    - Ethionamide
    - Cycloserine
    - Amikacin

Isoniazid (INH):

- It works by inhibiting the synthesis of mycolic acids, which are essential components of the cell wall of Mycobacterium tuberculosis, the bacteria that causes TB.

Chemical Name: 1-Cyclopropyl-7-[(1S,6S)-2,8-diazabicyclo[4.3.0]nonan-8-yl]-6-fluoro-8-methoxy-4-oxoquinoline-3-carboxylic acid

Chemical Structure:



Uses:

- Isoniazid is an antibiotic used to treat tuberculosis (TB). It is also used to prevent TB in people who have been exposed to the bacteria.

Stability and Storage conditions

- Isoniazid is stable at room temperature. It should be stored in a cool, dry place.

Type of Formulation

- Tablets
- Capsules
- Liquid Solution

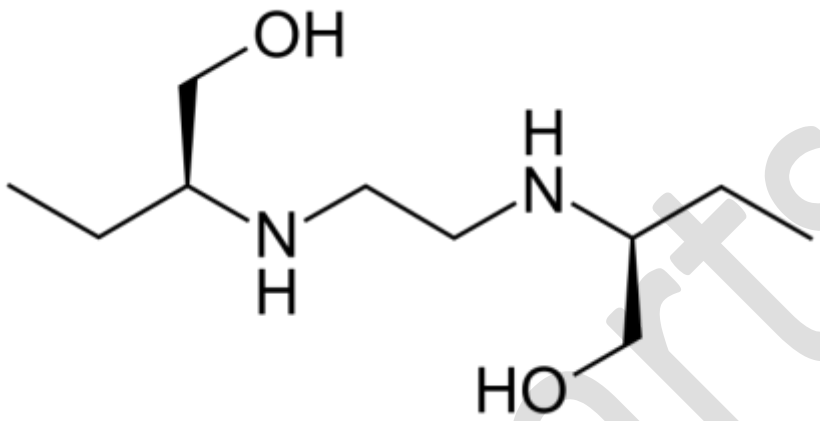
Brand Name

- Nydrazid
- Laniazid
- Hismanal

Ethambutol

Chemical Name: (2S,2'S)-2,2'-(Ethane-1,2-diyldiimino)dibutan-1-ol

Chemical Structure:



Uses:

- Ethambutol is a medication used in the management and treatment of tuberculosis.
- It may also be used to treat Mycobacterium avium complex, and Mycobacterium kansasii.

Stability and Storage conditions:

- Ethambutol is stable at room temperature. It should be stored in a cool, dry place.

Type of Formulation

- Tablet

Brand Name:

- Myambutol
- Etibi
- Servambutol

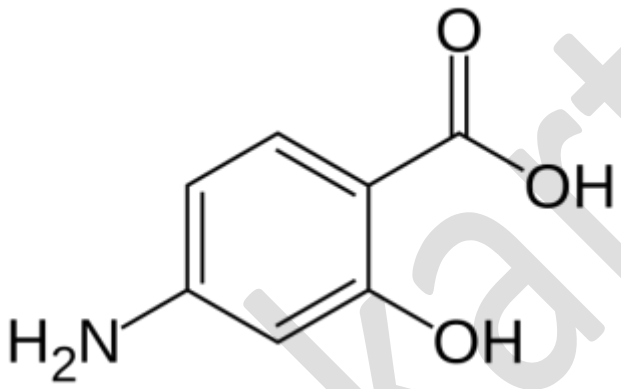
Para Amino Salicylic Acid:

- 4-Aminosalicylic acid, also known as para-aminosalicylic acid (PAS) and sold under the brand name Paser among others, is an antibiotic primarily used to treat tuberculosis.

Chemical Name:

- 4-Amino-2-hydroxybenzoic acid

Chemical Structure:



Uses:

- It also known as para-aminosalicylic acid (PAS) and sold under the brand name Paser among others, is an antibiotic primarily used to treat tuberculosis.
- The main use for 4-aminosalicylic acid is for the treatment of tuberculosis infections.

Stability and Storage conditions

- Para Amino Salicylic Acid is stable at room temperature. It should be stored in a cool, dry place.

Type of Formulation

- Tablet

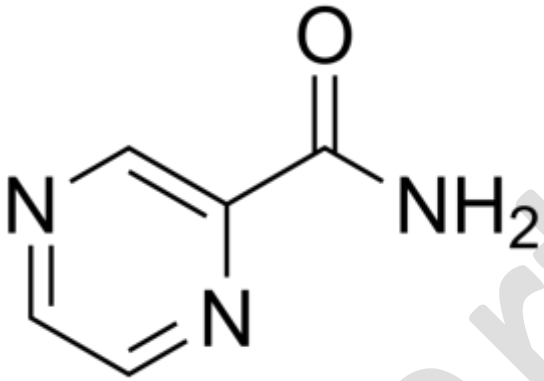
Brand Name:

- Paser

Pyrazinamide

Chemical Name: pyrazine-2-carboxamide

Chemical Structure:



Uses:

- Pyrazinamide is a medication used to treat tuberculosis.

Stability and Storage conditions:

- It is stable at room temperature. It should be stored in a cool, dry place.

Type of Formulation

- Tablet

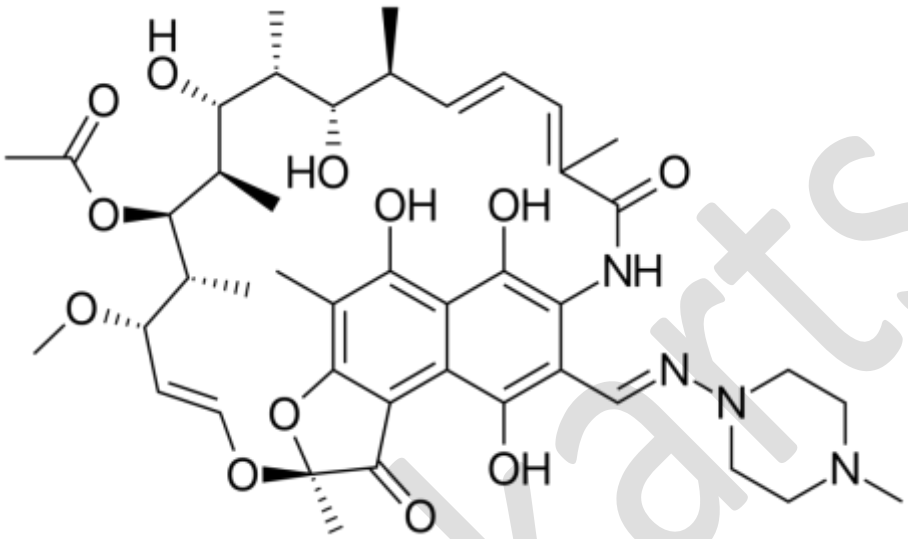
Brand Name

- Tibimide
- Pyrafit

Rifampicin

Chemical Name: 3-[[(4-Methyl-1-piperazinyl)imino]methyl]rifamycin

Chemical Structure:



Uses:

- Rifampicin is an antibiotic used to treat several types of mycobacterial infections including Mycobacterium avium complex, leprosy, and in combination with other antibacterials to treat latent or active tuberculosis.

Stability and Storage conditions

- It is stable at room temperature. It should be stored in a cool, dry place.

Type of Formulation

- Tablet

Brand Name

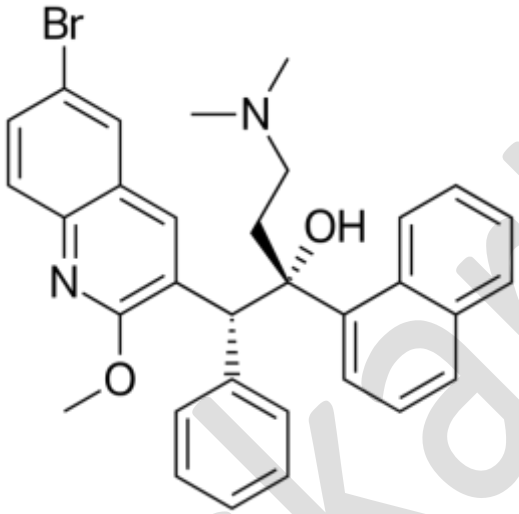
- Rifadin
- Rimactane

Bedaquiline

Chemical Name:

(1R,2S)-1-(6-Bromo-2-methoxy-3-quinolyl)-4-dimethylamino-2-(1-naphthyl)-1-phenylbutan-2-ol

Chemical Structure:



Uses:

- Bedaquiline is used along with at least three other medications to treat multi-drug resistant tuberculosis.

Stability and Storage conditions

- It is stable at room temperature. It should be stored in a cool, dry place.

Type of Formulation

- Tablet

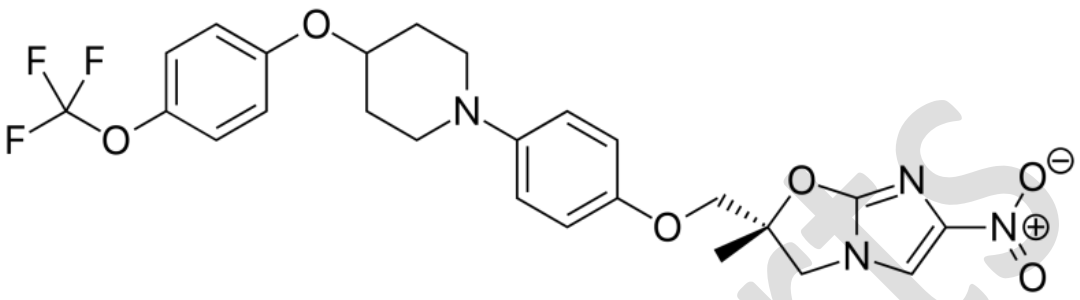
Brand Name:

- Sirturo

Delamanid

Chemical Name: (2R)-2-Methyl-6-nitro-2-[(4-{4-[4-(trifluoromethoxy)phenoxy]-1 piperidinyl}phenoxy)methyl]-2,3-dihydroimidazo[2,1-b] [1,3]oxazole

Chemical Structure:



Uses:

- It is used in the treatment of multidrug-resistant and extensively drug-resistant tuberculosis (TB) in a combination regimen.

Stability and Storage conditions

- It is stable at room temperature. It should be stored in a cool, dry place.

Type of Formulation

- Tablet

Brand Name

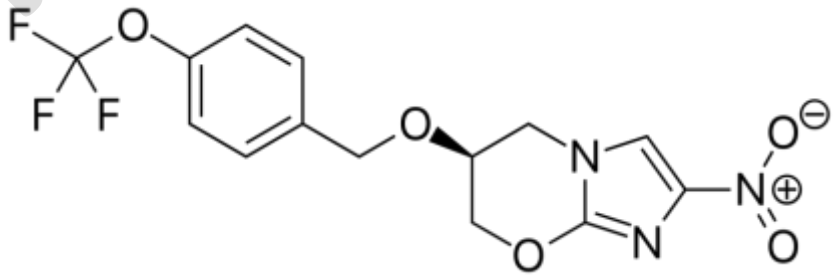
- Deltyba

Pretomanid*

Chemical Name:

(6S)-2-Nitro-6-{[4-(trifluoromethoxy)benzyl]oxy}-6,7-dihydro-5H-imidazo[2,1-b] [1,3]oxazine

Chemical Structure:



Uses:

- Pretomanid will not treat tuberculosis that is not active (latent), or tuberculosis that affects parts of the body other than the lungs.
- Pretomanid may also be used for purposes not listed in this medication guide.

Stability and Storage conditions

- It is stable at room temperature. It should be stored in a cool, dry place.

Type of Formulation

- Tablet

Brand Name

- Dovprela

Antiviral Agents:

- Antiviral agents are a class of medications used to treat viral infections.
- They target specific stages in the viral life cycle, such as the attachment of the virus to a cell, the entry of the virus into the cell, the replication of the virus, or the assembly of new virus particles.

Classification of Antiviral Agents:

1. **Nucleoside analogues:**
    - Examples of nucleoside analogues include acyclovir, valacyclovir, and famciclovir.
2. **Non-nucleoside analogues:**
    - Examples of non-nucleoside analogues include delavirdine, efavirenz, and nevirapine.
3. **Protease inhibitors:**
    - Examples of protease inhibitors include ritonavir, saquinavir, and lopinavir.

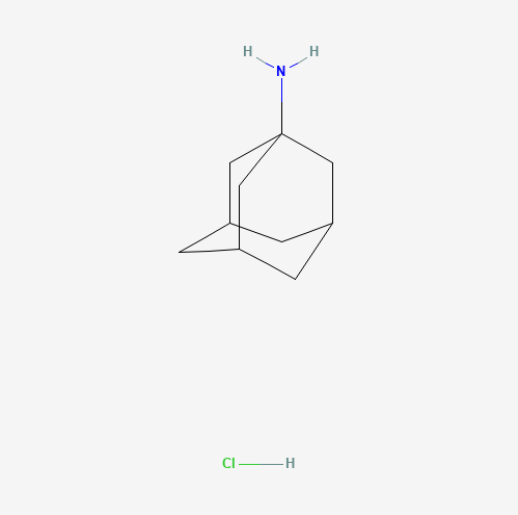
Example:

Antiviral Agents: Amantadine Hydrochloride, Idoxuridine, Acyclovir*, Foscarnet, Zidovudine, Ribavirin, Remdesivir, Favipiravir

Amantadine Hydrochloride

Chemical Name: adamantan-1-amine;hydrochloride

Chemical Structure:



Uses:

- Amantadine is an antidyskinetic medicine.
- It is used to treat Parkinson's disease (sometimes called "paralysis agitans" or "shaking palsy") and its symptoms, including dyskinesia (sudden uncontrolled movements).

Stability and Storage conditions:

- It is stable at room temperature. It should be stored in a cool, dry place.

Type of Formulation:

- Tablet

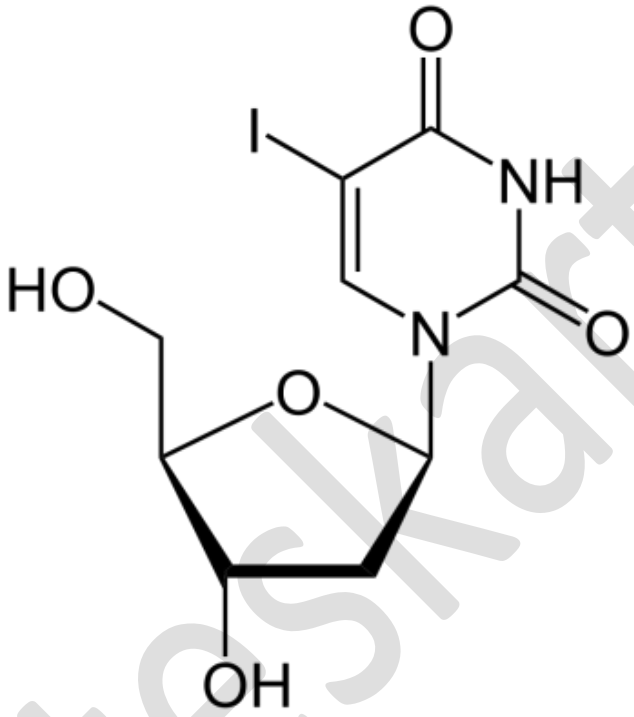
Brand Name:

- Symmetrel

Idoxuridine

Chemical Name: 1-[(2R,4S,5R)-4-hydroxy-5-(hydroxymethyl)oxolan-2-yl]-5-iodo-1,2,3,4-tetrahydropyrimidine-2,4-dione

Chemical Structure:



Uses:

- Idoxuridine is a pyrimidine analog antiviral used for the treatment of viral eye infections, including herpes simplex keratitis.
- An analog of deoxyuridine that inhibits viral DNA synthesis.
- The drug is used as an antiviral agent.

Stability and Storage conditions

- It is stable at room temperature. It should be stored in a cool, dry place.

Type of Formulation:

- Tablet

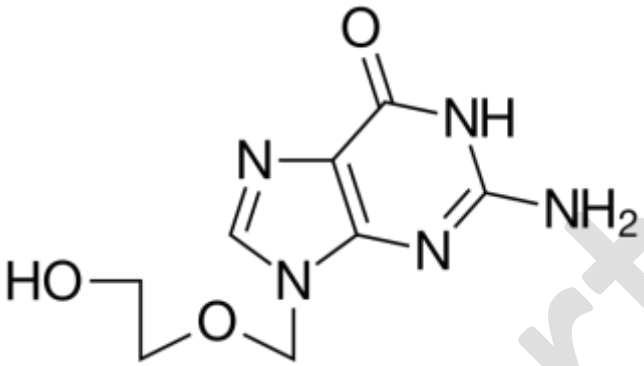
Brand Name

- Dendrid®
- Herplex®
- Stoxil®

Acyclovir*

Chemical Name: 2-Amino-1,9-dihydro-9-((2-hydroxyethoxy)methyl)-3H-purin-6-one

Chemical Structure:



Uses:

- Acyclovir is used to treat infections caused by certain types of viruses.
- It treats cold sores around the mouth (caused by herpes simplex).

Stability and Storage conditions

- It is stable at room temperature. It should be stored in a cool, dry place.

Type of Formulation:

- Tablet
- Syrup

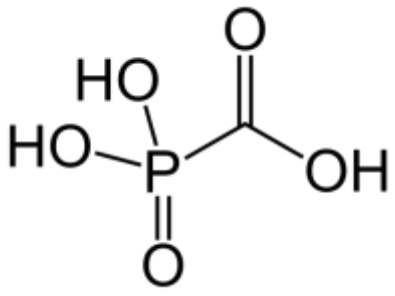
Brand Name

- ZOVIRAX

Foscarnet

Chemical Name: (trisodium phosphonoformate hexahydrate) IUPAC name: phosphonoformic acid

Chemical Structure:



Uses:

- Foscarnet is a medication used to manage and treat CMV, HSV, and VZV viral infections in AIDS and immunocompromised patients.
- It is in the antiviral class of drugs.

Stability and Storage conditions

- It is stable at room temperature. It should be stored in a cool, dry place.

Type of Formulation:

- Tablet

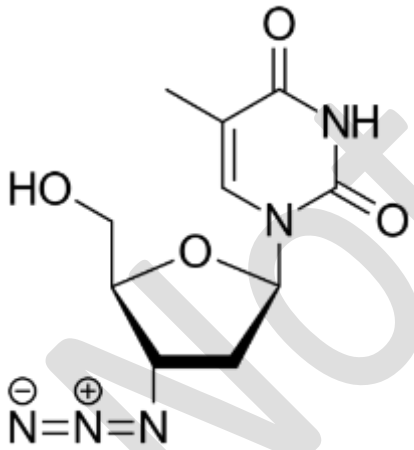
Brand Name

- Foscavir

Zidovudine

Chemical Name: 1-[(2R,4S,5S)-4-azido-5-(hydroxymethyl)oxolan-2-yl]-5-methylpyrimidine-2,4-dione[1]

Chemical Structure:



Uses:

- Zidovudine is used along with other medications to treat human immunodeficiency virus (HIV) infection.
- Zidovudine is given to HIV-positive pregnant women to reduce the chance of passing the infection to the baby.

Stability and Storage conditions

- It is stable at room temperature. It should be stored in a cool, dry place.

Type of Formulation:

- Tablet

Brand Name:

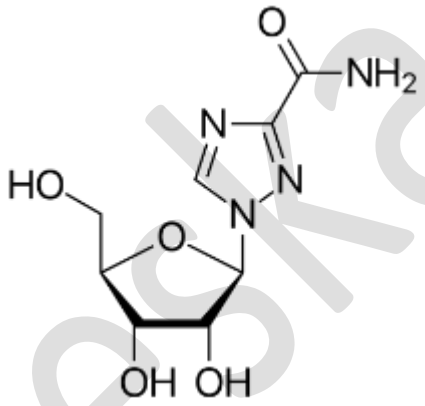
- Retrovir

Ribavirin

Chemical Name:

1-[(2R,3R,4S,5R)-3,4-dihydroxy-5-(hydroxymethyl)oxolan-2-yl]-1,2,4-triazole-3-carboxamide

Chemical Structure:



Uses:

- Ribavirin may be used to treat viral hemorrhagic fever that has been spread deliberately.
- Ribavirin is also sometimes used to treat severe acute respiratory syndrome (SARS; a virus that may cause breathing problems, pneumonia, and death).

Stability and Storage conditions

- It is stable at room temperature. It should be stored in a cool, dry place.

Type of Formulation:

- Tablet

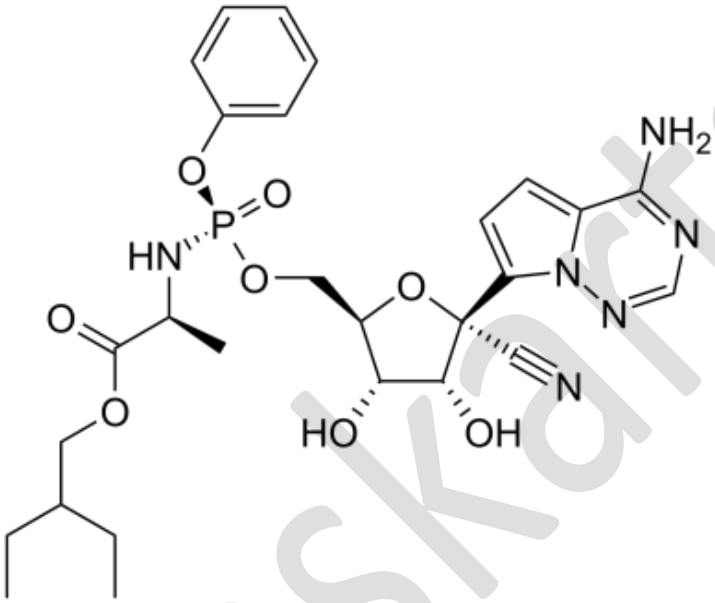
Brand Name

- Rebetol
- Ribasphere
- RibaPak
- Copegus
- Virazole, and Moderiba

Remdesivir

Chemical Name: (2S)-2-{(2R,3S,4R,5R)-[5-(4-Aminopyrrolo[2,1-f] [1,2,4]triazin-7-yl)-5-cyano-3,4-dihydroxy-tetrahydro-furan-2-ylmethoxy]phenoxy-(S)-phosphorylamino}propionic acid 2-ethyl-butyl ester

Chemical Structure:



Uses:

- Remdesivir injection is used to treat coronavirus disease 2019 (COVID-19) in hospitalized patients.
- It is also used to treat mild to moderate COVID-19 in non-hospitalized patients who are at high risk for progression to severe COVID-19 (eg, hospitalization, death).

Stability and Storage conditions:

- It is stable at room temperature. It should be stored in a cool, dry place.

Type of Formulation:

- Injection

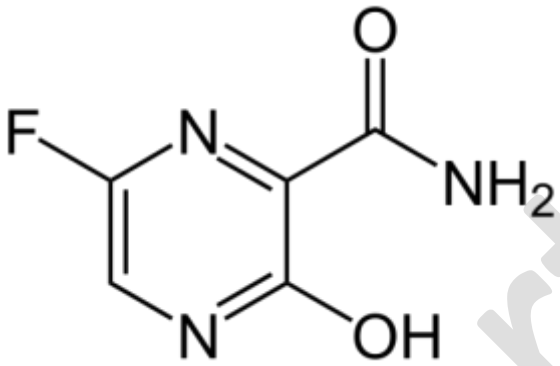
Brand Name:

- Redyx

Favipiravir

Chemical Name: 6-fluoro-3-hydroxypyrazine-2-carboxamide

Chemical Structure:



Uses:

Favipiravir is an antiviral medicine that is used to treat mild to moderate cases of coronavirus (COVID-19) infections.

Stability and Storage conditions

- It is stable at room temperature. It should be stored in a cool, dry place.

Type of Formulation:

- Injection

Brand Name

- Avigan

Antimalarials:

- Antimalarials are a class of drugs that are used to treat or prevent malaria. Malaria is a mosquito-borne disease caused by a parasite called Plasmodium.
- There are several different types of antimalarials, and they work by targeting different stages of the parasite's life cycle.

Classification of Antimalarials:

Classes Drugs

1. 4-aminoquinolines: Chloroquine (CQ), amodiaquine (AQ), Piperaquine
2. Quinoline-methanol: Mefloquine
3. Cinchona alkaloid: Quinine, quinidine
4. Biguanide: Proguanil (chloroguanide)
5. Diaminopyrimidine: Pyrimethamine
6. 8-aminoquinoline: Primaquine, tafenoquine
7. Sulfonamides and sulfone: Sulfadoxine, sulfamethopyrazine, dapsone
8. Amino alcohols: Halofantrine, lumefantrine
9. Sesquiterpine lactones: Artesunate, artemether
10. Naphthyridine Pyronaridine
11. Naphthoquinone: Atovaquone
12. Antibiotics: Tetracycline, Doxycycline, Clindamycin.

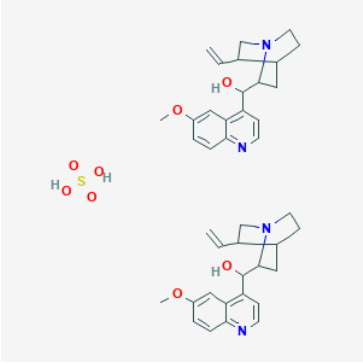
Example:

Antimalarials: Quinine Sulphate, Chloroquine Phosphate*, Primaquine Phosphate, Mefloquine*, Cycloguanil, Pyrimethamine, Artemisinin

Quinine Sulphate

Chemical Name: bis((R)-[(2S,5R)-5-ethenyl-1-azabicyclo[2.2.2]octan-2-yl](6-methoxyquinolin-4-yl)methanol); sulfuric acid

Chemical Structure:



Uses:

- Qualaquin (quinine sulfate) is an antimalarial drug used to treat malaria, a disease caused by parasites.
- Parasites that cause malaria typically enter the body through the bite of a mosquito.

Stability and Storage conditions

- It is stable at room temperature. It should be stored in a cool, dry place.

Type of Formulation:

- Injection

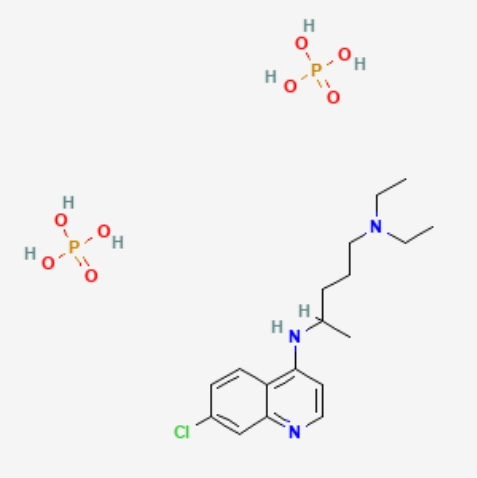
Brand Name

- Cinkona
- Dyquin

Chloroquine Phosphate*

Chemical Name: 7-Chloro- [4-(4-diethylamino-1-methylbutylamino)] quinoline diphosphate.

Chemical Structure:



Uses:

- Chloroquine phosphate is used to prevent and treat malaria.
- It is also used to treat amebiasis.
- Chloroquine phosphate is in a class of drugs called antimalarials and amebicides.
- It works by killing the organisms that cause malaria and amebiasis.

Stability and Storage conditions

- It is stable at room temperature. It should be stored in a cool, dry place.

Type of Formulation:

- Tablet

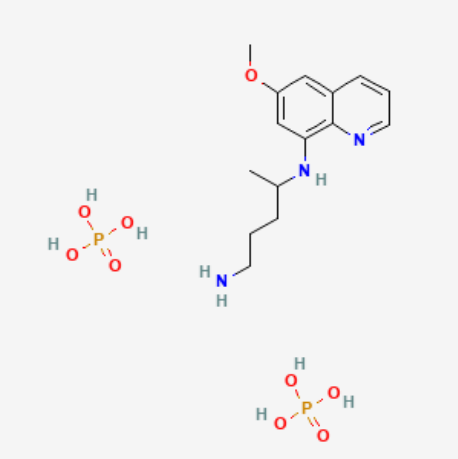
Brand Name:

- Aralen

Primaquine Phosphate

Chemical Name: 4-N-(6-methoxyquinolin-8-yl)pentane-1,4-diamine;phosphoric acid

Chemical Structure:



Uses:

Primaquine is used alone or with another medication to treat malaria (a serious infection that is spread by mosquitoes in certain parts of the world and can cause death) and to prevent the disease from coming back in people that are infected with malaria.

Stability and Storage conditions

- It is stable at room temperature. It should be stored in a cool, dry place.

Type of Formulation:

- Tablet

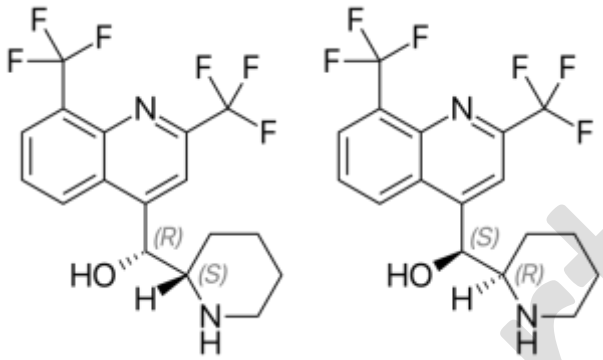
Brand Name:

- Jasoprim
- Malirid

Mefloquine*

Chemical Name: [(R*,S*)-2,8-Bis(trifluoromethyl)quinolin-4-yl]-(2-piperidyl)methanol

Chemical Structure:



Uses:

- Mefloquine is used to treat malaria (a serious infection that is spread by mosquitoes in certain parts of the world and can cause death) and to prevent malaria in travelers who visit areas where malaria is common.
- Mefloquine is in a class of medications called antimalarials.

Stability and Storage conditions

- It is stable at room temperature. It should be stored in a cool, dry place.

Type of Formulation:

- Tablet

Brand Name:

- Larimef
- Mefax

Cycloguanil

Chemical Name: 1-(4-chlorophenyl)-6,6-dimethyl-1,3,5-triazine-2,4-diamine

Uses:

- It is often used for malarial prophylaxis alone or in combination with chloroquine.
- It can also be used in the prophylaxis and treatment of P. falciparum in combination with atovaquone

Stability and Storage conditions

- It is stable at room temperature. It should be stored in a cool, dry place.

Type of Formulation:

- Tablet

Brand Name:

- Alendronate tablet,
- Fosarmax

Pyrimethamine

Chemical Name: 5-(4-chlorophenyl)-6-ethyl- 2,4-pyrimidinediamine

Uses:

- Pyrimethamine is an antiparasitic drug used in the prevention and treatment of toxoplasmosis and malaria.

Stability and Storage conditions

- It is stable at room temperature. It should be stored in a cool, dry place.

Type of Formulation:

- Tablet

Brand Name:

- Daraprim

Artemisinin

Chemical Name: (3R,5aS,6R,8aS,9R,12S,12aR)-Octahydro-3,6,9-trimethyl-3,12-epoxy-12H-pyrano[4,3-j]-1,2-benzodioxepin-10(3H)-one

Uses:

- Artemisinin (ARS) and its derivatives (ARSs) are recommended as the first-line antimalarial drugs for the treatment of malaria.

Stability and Storage conditions

- It is stable at room temperature. It should be stored in a cool, dry place.

Type of Formulation:

- Tablet

Brand Name:

- Abther AB

Sulfonamides:

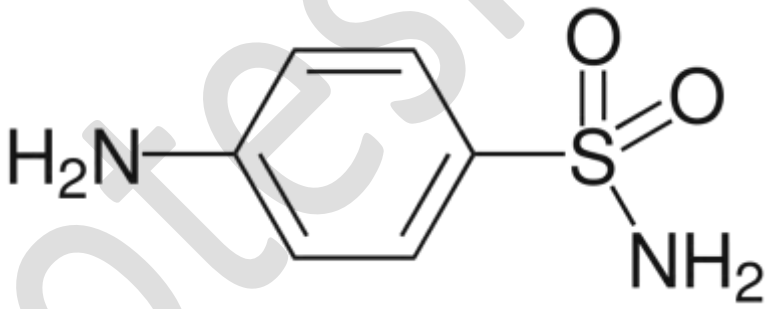
- Sulfonamides are a group of synthetic antimicrobial drugs that contain the sulfonamide chemical group. They are also known as sulfa drugs or sulpha drugs.
- Sulfonamides were the first class of antibiotics to be discovered, and they are still used today to treat a variety of bacterial infections.
- Sulfonamides work by interfering with the metabolism of bacteria.
- They do this by blocking the production of a substance called folic acid, which is essential for bacterial growth. As a result, the bacteria are unable to grow and multiply, and the infection is eventually cleared.
- Sulfonamides are effective against a wide range of bacteria, including those that cause urinary tract infections, pneumonia, and meningitis.
- They are also used to treat some fungal infections.

Example:

Sulfanilamide

Chemical Name: 4-amino benzene sulfonamide

Chemical Structure:



Uses:

- Sulfonamides (SN) or sulfanilamides belong to an important class of synthetic antimicrobial drugs that are pharmacologically used as broad spectrum for the treatment of human and animal bacterial infections

Stability and Storage conditions

- It is stable at room temperature. It should be stored in a cool, dry place.

Type of Formulation:

- Tablet

Brand Name:

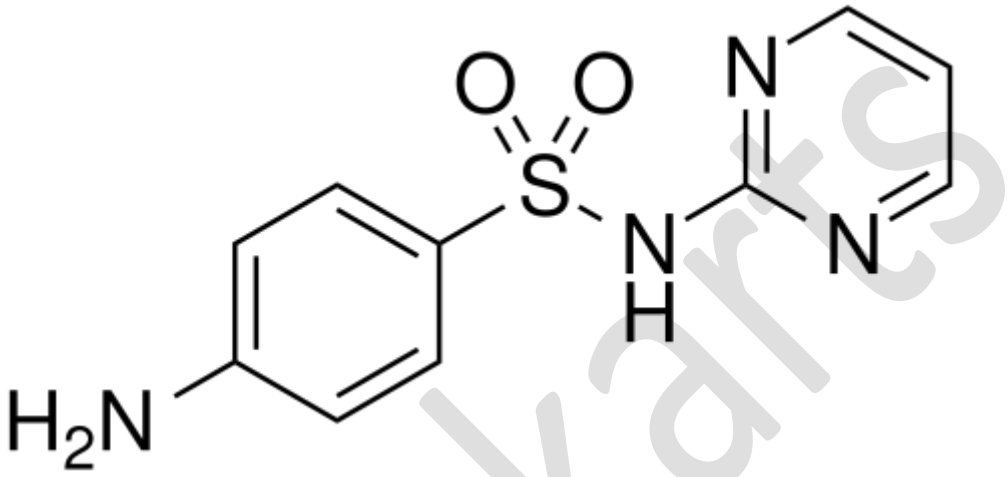
- safinamide

Sulfadiazine

Chemical Name:

- 4-amino-N-pyrimidin- 2-yl-benzenesulfonamide

Chemical Structure:



Uses:

- Sulfadiazine, a sulfa drug, eliminates bacteria that cause infections, especially urinary tract infections.

Stability and Storage conditions

- It is stable at room temperature. It should be stored in a cool, dry place.

Type of Formulation:

- Tablet

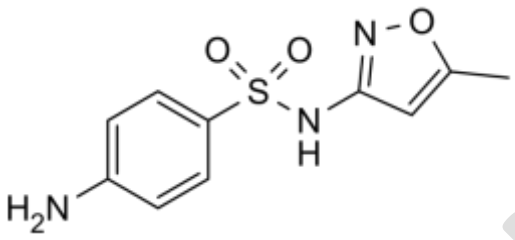
Brand Name:

- Lantrisul
- Neotrizine

Sulfamethoxazole

Chemical Name: 4-Amino-N-(5-methylisoxazol-3-yl)-benzenesulfonamide

Chemical Structure:



Uses:

- Sulfamethoxazole and trimethoprim combination is used to treat infections including urinary tract infections, middle ear infections (otitis media), bronchitis, traveler's diarrhea, and shigellosis (bacillary dysentery).

Stability and Storage conditions

- It is stable at room temperature. It should be stored in a cool, dry place.

Type of Formulation:

- Tablet

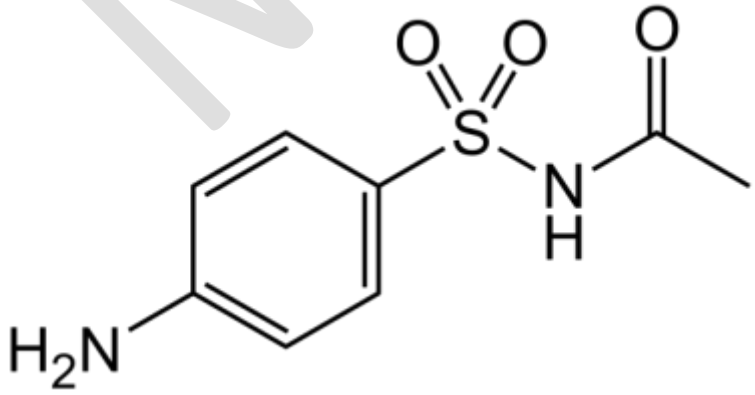
Brand Name:

- Bactrim or Septra

Sulfacetamide*

Chemical Name: N-(4-aminophenyl)sulfonylacetamide

Chemical Structure:



Uses:

- This medication is used to treat bacterial eye infections (such as conjunctivitis.
- Sulfacetamide works by stopping the growth of bacteria. This medication treats only bacterial eye infections.

Stability and Storage conditions

- It is stable at room temperature. It should be stored in a cool, dry place.

Type of Formulation:

- Tablet
- Eye Drops

Brand Name:

- Klaron
- Ovace

Mafenide Acetate

Chemical Name: 4-(Aminomethyl)benzenesulfonamide

Chemical Structure:

Uses:

- Mafenide is a sulfonamide-type antimicrobial agent used to treat severe burns.

Stability and Storage conditions

- It is stable at room temperature. It should be stored in a cool, dry place.

Type of Formulation:

- Tablet

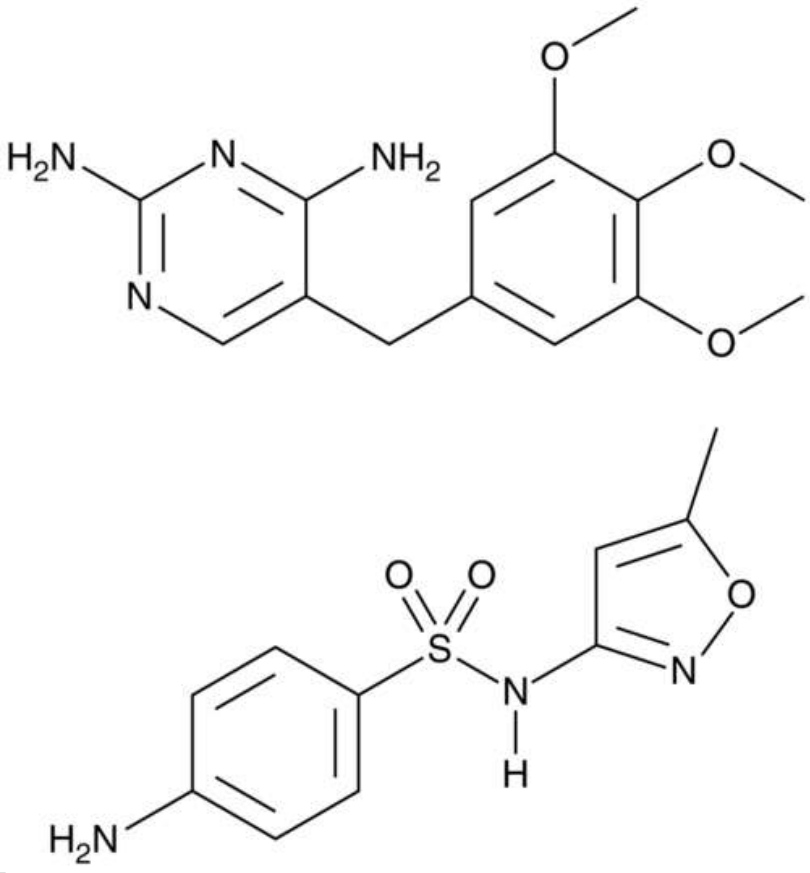
Brand Name:

- Sulfamylon

Cotrimoxazole

Chemical Name: 5-[(3,4,5-trimethoxyphenyl)methyl]-2,4-pyrimidinediamine mixture with 4-amino-N-(5-methyl-3-isoxazolyl)-benzenesulfonamide.

Chemical Structure:



Uses:

- Co-trimoxazole is used to treat certain bacterial infections, such as pneumonia (a lung infection), bronchitis (infection of the tubes leading to the lungs), and infections of the urinary tract, ears, and intestines.
- It also is used to treat 'travelers' diarrhea.

Stability and Storage conditions

- It is stable at room temperature. It should be stored in a cool, dry place.

Type of Formulation:

- Tablet

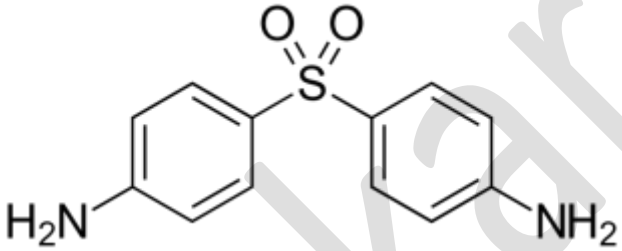
Brand Name:

- Septrin

Dapsone*

Chemical Name: 4,4'-sulfonyldianiline (SDA) or diaminodiphenyl sulfone (DDS)

Chemical Structure:



Uses:

- Dapsone is used to treat leprosy and skin infections.

Stability and Storage conditions

- It is stable at room temperature. It should be stored in a cool, dry place.

Type of Formulation:

- Tablet

Brand Name:

- Aczone

Note: