

Chapter-5 | P. Chemistry

Drugs Acting on Central Nervous System

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:

Drugs Acting on Central Nervous System

- **Anaesthetics:** Thiopental Sodium*, Ketamine Hydrochloride*, Propofol
- **Sedatives and Hypnotics:** Diazepam*, Alprazolam*, Nitrazepam, Phenobarbital*
- **Antipsychotics:** Chlorpromazine Hydrochloride*, Haloperidol*, Risperidone*, Sulpiride*, Olanzapine, Quetiapine, Lurasidone
- **Anticonvulsants:** Phenytoin*, Carbamazepine*, Clonazepam, Valproic Acid*, Gabapentin*, Topiramate, Vigabatrin, Lamotrigine
- **Anti-Depressants:** Amitriptyline Hydrochloride*, Imipramine Hydrochloride*, Fluoxetine*, Venlafaxine, Duloxetine, Sertraline, Citalopram, Escitalopram, Fluvoxamine, Paroxetine



Drugs Acting on Central Nervous System:

The CNS is responsible for controlling and regulating many of our bodily functions, including our thoughts, emotions, and movements. Drugs that act on the CNS can have a wide range of effects, depending on the specific drug and the way it interacts with the brain.

Some common types of drugs that act on the CNS include:

- Stimulants, which increase activity in the CNS and can cause feelings of alertness, energy, and euphoria. Examples of stimulants include caffeine, amphetamines, and cocaine.
- Depressants, which slow down activity in the CNS and can cause feelings of drowsiness, relaxation, and sedation. Examples of depressants include alcohol, barbiturates, and opioids.
- Antipsychotics, which are used to treat mental disorders such as schizophrenia and bipolar disorder. Antipsychotics work by blocking the effects of certain neurotransmitters in the brain.
- Antidepressants, which are used to treat depression. Antidepressants work by increasing the levels of certain neurotransmitters in the brain, such as serotonin and norepinephrine.
- Anxiolytics, which are used to treat anxiety disorders. Anxiolytics work by reducing the activity of the amygdala, a part of the brain that is involved in the fear response.



Anaesthetics: Thiopental Sodium*, Ketamine Hydrochloride*, Propofol

Anaesthetics:

Anesthetics are drugs that are used to induce anesthesia, which is a temporary loss of sensation or awareness. There are two main types of anesthetics: local anesthetics and general anesthetics.

- Local anesthetics block the sensation of pain in a specific area of the body. They are often used for dental procedures, minor surgery, and injections.
- General anesthetics cause a loss of consciousness and a general loss of sensation throughout the body. They are used for major surgery, childbirth, and other procedures that require the patient to be completely unconscious.

Classification of Anaesthetics:

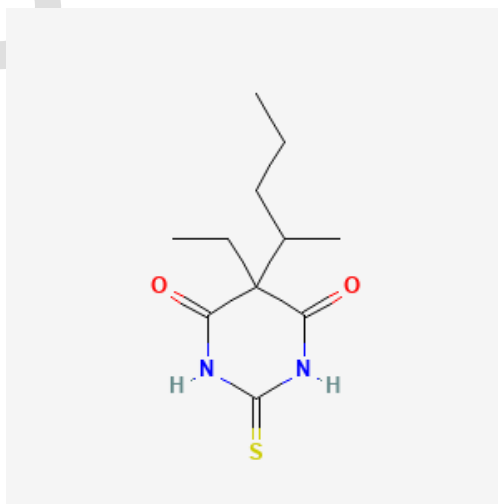
- Local anesthetics: lidocaine, bupivacaine, mepivacaine.
- General anesthetics: **Thiopental Sodium, propofol**, sevoflurane, isoflurane, desflurane.
- Inhalational anesthetics: nitrous oxide, halothane.
- Intravenous anesthetics: **ketamine Hydrochloride**, etomidate, midazolam.

Thiopental Sodium:

Chemical name:

- sodium 5-ethyl-5-pentan-2-yl-2-sulfanylidene-1,3-diazinane-4,6-dione

Chemical structure:



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Uses:

- They are used treat convulsions, and reduce intracranial pressure.
- Thiopental sodium may be employed in the ICU to provide sedation for patients requiring mechanical ventilation or other invasive procedures.
- It helps to achieve a state of sedation and unconsciousness in critically ill patients.
- Thiopental sodium can be used in the management of status epilepticus, a condition characterized by prolonged or repeated seizures.
- It is administered to terminate seizure activity and induce sedation to protect the patient.

Stability and storage conditions:

It should be stored at 22°C. Thiopental remains stable and sterile for 6 days and well beyond 7 days at 3°C.

Types of formulations

- Injection,
- Powder,
- Solution

Brand names:

- Thiojex,
- Pentone,
- Pentothal,
- Anesthal,

Ketamine Hydrochloride:

- Ketamine Hydrochloride is the hydrochloride salt of a synthetic derivative of cyclohexanone with analgesic and anesthetic activities.
- Ketamine is an NMDA receptor antagonist with a potent anesthetic effect.
- Ketamine is a rapid-acting general anesthetic and NMDA receptor antagonist used for induction of anesthesia diagnostic and surgical procedures typically in combination with a muscle relaxant.

Chemical name:

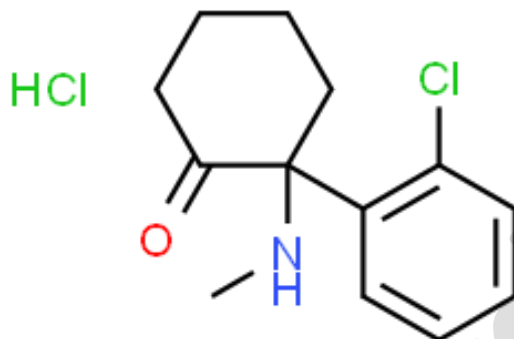
2-(2-Chlorophenyl)-2-(methylamino)cyclohexanone hydrochloride



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Chemical structure:



Uses:

- Ketamine is primarily known for its anesthetic properties.
- Ketamine can also provide effective pain relief, particularly in situations where opioids may not be suitable or effective.
- Ketamine hydrochloride is extensively used in veterinary medicine for similar purposes as in humans.
- This sedative effect can be useful for procedures such as minor surgeries, dental procedures, and diagnostic tests like endoscopies.

Stability and storage conditions:

- It should be kept in tightly closed container and in dry and well ventilated place.

Type of Formulation

- Liquid solution
- Powder

Popular Brand Names

- Ketalar
- Ketmim
- Bupivacaine
- Ketamine
- ketorola



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Propofol:

Propofol is an intravenous anesthetic used for procedural sedation, during monitored anesthesia care, or as an induction agent for general anesthesia.

Chemical name:

2,6-Diisopropylphenol 2,6-bis(propan-2-yl)phenol

Uses:

- Use as Anesthesia
- Propofol is used to put you to sleep and keep you asleep during general anesthesia for surgery or other medical procedures. It is used in adults as well as children 2 months and older.
- Propofol is also used to sedate a patient who is under critical care and needs a mechanical ventilator (breathing machine).

Stability and storage conditions:

- It should be stored between the temperatures of 4°C to 22°C (40°F to 72°F). Refrigeration is not required.

Type of Formulation:

- Emulsion,
- Suspension,
- Injectable

Popular Brand Names

- Diprivan.
- Fresenius Propoven.



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● Sedatives and Hypnotics:

- Diazepam*,
- Alprazolam*,
- Nitrazepam,
- Phenobarbital*

Sedatives and Hypnotics:

- **Sedatives:** Sedatives are drugs that reduce irritability or excitement, promoting a sense of calm and relaxation. They can be used to treat anxiety, agitation, or tension. Some common sedatives include benzodiazepines, barbiturates, and certain antihistamines.
- **Hypnotics:** Hypnotics are drugs specifically used to induce sleep. They are also known as sleep aids or sleeping pills. Some common hypnotics include zolpidem (Ambien), eszopiclone (Lunesta), and zaleplon (Sonata).

Classification of Sedative and Hypnotics:

Benzodiazepines:

- Diazepam (Valium)
- Alprazolam (Xanax)
- Lorazepam (Ativan)
- Clonazepam (Klonopin)

Non-benzodiazepine hypnotics:

- Zolpidem (Ambien)
- Eszopiclone (Lunesta)
- Zaleplon (Sonata)

Barbiturates:

- Phenobarbital
- Secobarbital (Seconal)
- Pentobarbital (Nembutal)

Miscellaneous:

- Chloral hydrates
- Triclophos
- Paraldehyde



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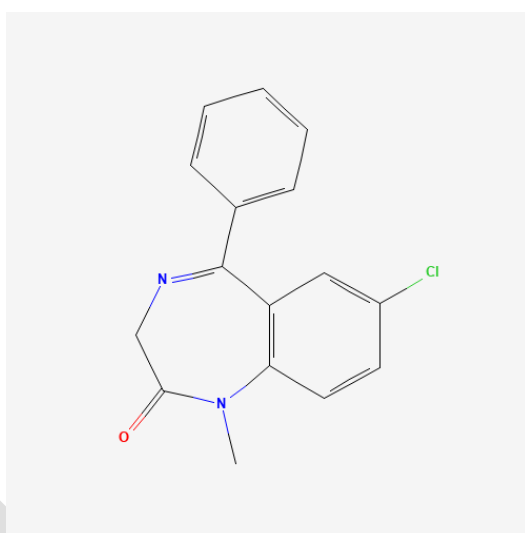
Diazepam* (Imp):

- Diazepam is a medication belonging to the benzodiazepine class of sedative-hypnotics. It is commonly prescribed for its anxiolytic (anti-anxiety), sedative, muscle relaxant, and anticonvulsant properties.

Chemical name:

7-chloro-1-methyl-5-phenyl-3H-1,4-benzodiazepin-2-one

Chemical structure:



Uses:

- Diazepam is used to treat anxiety, alcohol withdrawal, and seizures.
- It is also used to relieve muscle spasms and to provide sedation before medical procedures. This medication works by calming the brain and nerves. Diazepam belongs to a class of drugs known as benzodiazepines.
- Diazepam is sometimes used with other medications to treat muscle spasms and stiffness, or seizures.

Stability and storage conditions:

Diazepam injection is chemically stable as 5mg doses in disposable glass syringes for 90 days when stored at 4°C or 30°C. It should be stored in refrigerator.

Types of Formulations

- Tablet,
- Oral solution,
- Rectal gel,



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- Injectable solution

Popular Brand Names

- Valium®
- Valtoco
- Diazepam Intensol

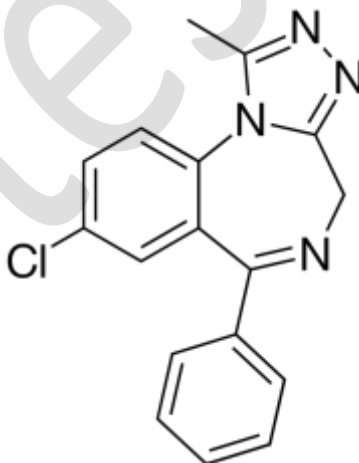
Alprazolam:

- Alprazolam is a benzodiazepine (ben-zoe-dye-AZE-eh-peen). It is thought that it works by enhancing the activity of certain neurotransmitters in the brain.
- It belongs to a class of medications called benzodiazepines which act on the brain and nerves (central nervous system) to produce a calming effect. It works by enhancing the effects of a certain natural chemical in the body (GABA).

Chemical Name:

- $C_{17}H_{13}ClN_4$; 8-Chloro-1-methyl-6-phenyl-4H-[1,2,4]triazolo[4,3-a][1,4]benzodiazepine.

Chemical structure:



Uses:

Alprazolam is used to treat anxiety and panic disorders.

Alprazolam has also been misused for recreational purposes because of its disinhibition, euphoria, and anxiolytic effects.

Stability and storage conditions:



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- It should be stored in a dry place at room temperature . Also, keep bottle out of direct sunlight and out of the reach of Children and pets. Make sure it stays in its original Container

Types of Formulation

- Tablet,
- Extended release

Popular Brand Names

- Xanax,
- Alprazolam
- Intensol,
- Xanax XR,
- Niravam

Nitrazepam:

- Nitrazepam is a medication that belongs to the benzodiazepine class of drugs. It is primarily used as a short-term treatment for insomnia, helping individuals to fall asleep and stay asleep.
- Nitrazepam works by enhancing the effects of gamma-aminobutyric acid (GABA), a neurotransmitter that produces a calming effect in the brain.

Chemical Name:

- **1,3-Dihydro-7-nitro-5-phenyl-2H-1,4- benzodiazepin-2-one.**

Uses:

- Nitrazepam Tablets should be used for short term treatment of insomnia only when it is severe, disabling, or subjecting the individual to extreme distress, where daytime sedation is acceptable.
- Nitrazepam is a long-acting benzodiazepine with intermediate onset commonly used to treat panic disorders, severe anxiety, insomnia, and seizures.

Stability and storage conditions:

- Nitrazepam should be stored in a cool, dry place away from light and moisture at temperatures between 20-25°C (68-77°F) to maintain stability.

Types of Formulation:

- Tablet
- Injectable solution



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Popular Brand Names:

- Mogadon
- Nitrosun
- Apodorm

Phenobarbital*

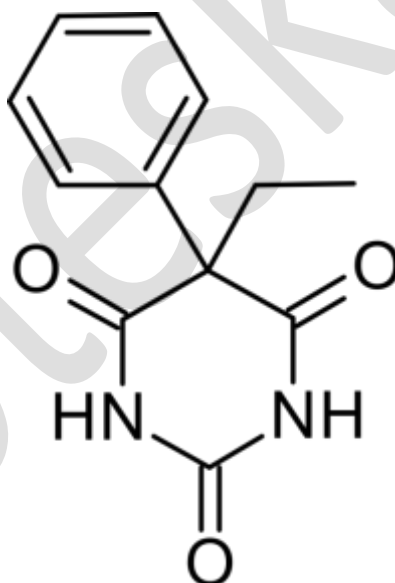
- **Phenobarbital** belongs to a class of drugs known as barbiturate anticonvulsants/hypnotics. It is known for being highly addictive and, in prior years, found to be a common agent of choice for suicide attempts.

Chemical Name:

- 5-ethyl-5-phenylbarbituric acid

Chemical Formula: $C_{12}H_{12}N_2O_3$

Chemical structure:



Use:

- Phenobarbital belongs to a class of drugs known as barbiturate anticonvulsants/hypnotics.
- Phenobarbital may be used in the management of alcohol withdrawal symptoms, as it can help alleviate symptoms such as anxiety, insomnia, and agitation.
- It works by controlling the abnormal electrical activity in the brain that occurs during a seizure.
- This medication is also used for a short time (usually no more than 2 weeks) to help calm you or help you sleep during periods of anxiety.



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- Phenobarbital is a central nervous system depressant and can be used as a sedative or hypnotic medication. It may be prescribed to induce sleep or to manage anxiety or agitation.

Stability and storage conditions:

It should be stored in a cool, dry place away from light and moisture at temperatures between 20-25°C (68-77°F) to maintain stability.

Types of Formulation:

- Tablets
- Syrup/Elixir
- Injection

Popular Brand Names:

- Luminal
- Solfoton
- Mudrane
- Antrocol
- Donnatal
- Antispasmodic



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Antipsychotics: Chlorpromazine Hydrochloride*, Haloperidol*, Risperidone*, Sulpiride*, Olanzapine, Quetiapine, Lurasidone.

Antipsychotics:

Antipsychotics, also known as neuroleptics are a class of psychotropic medication primarily used to manage psychosis (including delusions, hallucinations, paranoia or disordered thought), principally in schizophrenia but also in a range of other psychotic disorders.

Classification of Antipsychotics:

Based on Chemical Classification:

- **Phenothiazines**
 - Aliphatic side chain: Chlorpromazine, triflupromazine
 - Piperidine side chain: Thioridazine
 - Piperazine side chain: Trifluoperazine, fluphenazine –
- **Butyrophenones:** Haloperidol, Trifluperidol,
- **Penfluridol** – Thioxanthenes: Flupenthixol –
- **Other heterocyclics:** Pimozide, Loxapine –
- **Atypical antipsychotics:** Clozapine, risperidone, olanzapine, quetiapine, aripiprazole, ziprasidone.

Chlorpromazine Hydrochloride:

Chlorpromazine, marketed under the brand names Thorazine and Largactil among others, is an antipsychotic medication. It is primarily used to treat psychotic disorders such as schizophrenia.

Chemical name:

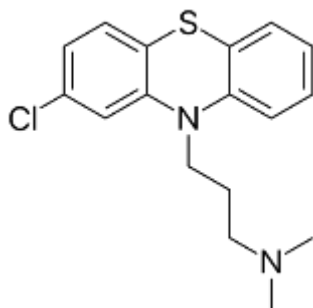
3-(2-chlorophenothiazin-10-yl)-N,N-dimethylpropan-1-amine;hydrochloride.



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Chemical structure:



Uses:

- Chlorpromazine is a medication used to manage and treat schizophrenia, bipolar disorder, and acute psychosis.
- It is a member of the typical antipsychotics or neuroleptic medication category, also known as first-generation antipsychotics.
- This medication is used **to treat certain mental/mood disorders** (such as schizophrenia, psychotic disorders, manic phase of bipolar disorder).
- Chlorpromazine is also used in adults to **treat nausea and vomiting, anxiety before surgery, chronic hiccups**, acute intermittent porphyria,

Stability and storage conditions:

- Chlorpromazine hydrochloride like oral solutions, tablets and injection should be stored at temperature less than 40 °C,

Types of formulations:

- Tablets
- Oral Syrup
- Injection

Popular brand names:

- Thorazine
- Largactil
- Abbott
- Cain



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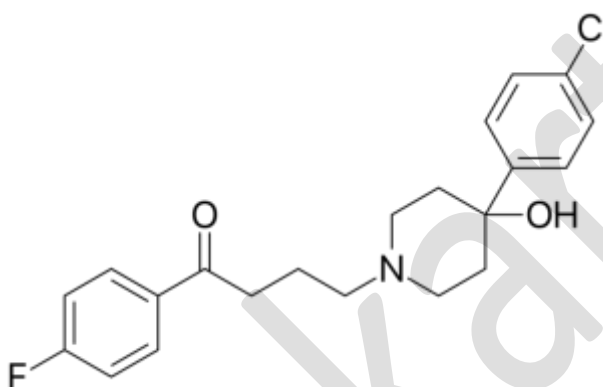
Haloperidol*:

Haloperidol is an antipsychotic agent used to treat schizophrenia and other psychoses, as well as symptoms of agitation, irritability, and delirium.

Chemical name:

[4-(4-chlorophenyl)-1-[4-(4-fluorophenyl)-4-oxobutyl]piperidin-4-yl] decanoate.

Chemical structure:



Uses:

- Haloperidol is used to **treat certain mental/mood disorders** (such as schizophrenia, schizoaffective disorders).
- Haloperidol is an antipsychotic agent used to **treat schizophrenia and other psychoses**, as well as symptoms of agitation, irritability, and delirium.
- It can also treat behavioral issues among children. This medication comes in a tablet form that you can take by mouth with a glass of water as directed.

Stability and storage conditions:

- The haloperidol injection should be stored at a temperature of 20° to 25°C. It should be protected from light and should not be refrigerated.

Types of formulations:

- Tablet
- Oral Solution

Popular brand names:

- Haldol
- Haloperidol LA,
- Peridol



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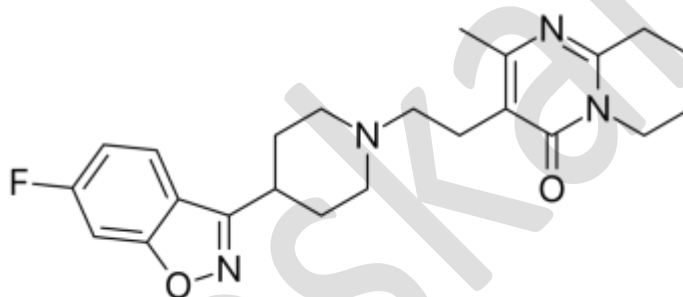
Risperidone:

- **Risperidone** is used to treat certain mental/mood disorders (such as schizophrenia, bipolar disorder, irritability associated with autistic disorder).
- Risperidone, sold under the brand name Risperdal among others, is an atypical antipsychotic used to treat schizophrenia and bipolar disorder.
- It is taken either by mouth or by injection.
- The injectable versions are long-acting and last for 2–4 weeks.

Chemical name:

3-[2-[4-(6-fluoro-1,2-benzisoxazol-3-yl)-1-piperidinyl]ethyl]-6,7,8,9-tetrahydro-2-methyl-4H-pyrido[1,2-a]pyrimidin-4-one.

Chemical structure:



Uses:

Risperidone is mainly used for the treatment of schizophrenia, bipolar disorder, and irritability associated with autism.

Stability and storage conditions:

It should be stored at room temperature and away from light and moisture. The liquid form of this medication should not be refrigerated and should be kept away from children

Types of formulations:

- Tablet
- Oral Solution

Popular brand names:

- RisperDAL.
- Act risperiDONE.
- AG-risperiDONE.
- APO-risperiDONE.



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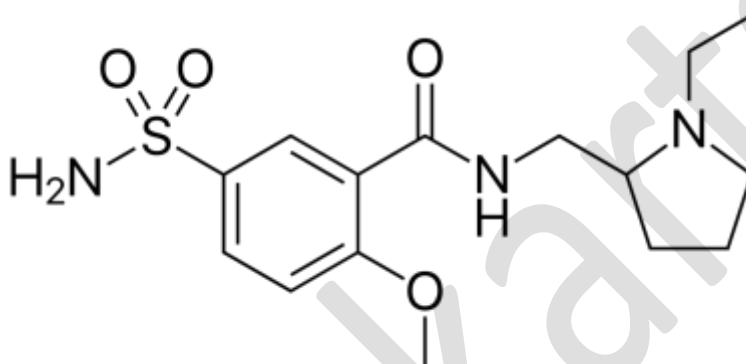
Sulpiride*:

Sulpiride is a selective D2 dopamine receptor antagonist indicated to treat chronic and acute schizophrenia.

Chemical name:

N-[(1-ethylpyrrolidin-2-yl)methyl]-2-methoxy-5-sulfamoylbenzamide

Chemical structure:



Uses:

- It is prescribed for treating schizophrenia.
- **Sulpiride** is a strong drug **used** for the treatment of mental health conditions and psychosis such as major depression.

Stability and Storage Conditions

- It should be stored in a cool and dry place. It should be kept away from direct heat and light.

Types of Formulations

- Tablets,
- Capsules,
- Solutions

Popular Brand Names

- Dogmatil,
- Espiride,
- Sulpor,
- Dolmatil,



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Olanzapine:

Olanzapine is used to treat the symptoms of schizophrenia (a mental illness that causes disturbed or unusual thinking, loss of interest in life, and strong or inappropriate emotions) in adults and teenagers 13 years of age and older.

Chemical name:

2-Methyl-4-(4-methyl-1-piperazinyl)-10H-thieno[2,3-b][1,5]

Note: Uses, Stability and Storage Conditions, Types of Formulations same as Sulpiride.

Popular Brand Names:

- ZyPREXA.
- ZyPREXA Zydis.
- Lanopin

Quetiapine:

Chemical name:

2-(2-(4-Dibenzo[b,f][1,4]thiazepine-11-yl-1-piperazinyl)ethoxy)ethanol

Note: Uses, Stability and Storage Conditions, Types of Formulations same as Olanzapine.

Popular Brand Names:

- SEROquel.
- SEROquel XR.

Lurasidone:

Chemical name:

(3aR,4S,7R,7aS)-2-[[[(1R,2R)-2-(piperazin-1-ylmethyl)cyclohexyl]methyl]hexahydro-1H-4,7-methanoisindole-1,3(2H)-dione

Note: Uses, Stability and Storage Conditions, Types of Formulations same as Olanzapine.

Popular Brand Names:

- Latuda®



Anticonvulsants: Phenytoin*, Carbamazepine*, Clonazepam, Valproic Acid*, Gabapentin*, Topiramate, Vigabatrin, Lamotrigine

Anticonvulsants:

- Anticonvulsants, also known as antiepileptic drugs (AEDs) or antiseizure drugs, are medications used to prevent or control seizures. They work by affecting the electrical activity in the brain.
- Anticonvulsants are used to treat epilepsy and other seizure disorders, as well as some other medical conditions, such as bipolar disorder, nerve pain, migraine headaches, fibromyalgia, and restless leg syndrome.
- There are many different types of anticonvulsants, and they work in different ways. Some anticonvulsants work by blocking the spread of electrical signals in the brain, while others work by stabilizing the electrical activity in the brain.
- Anticonvulsants can have side effects, such as drowsiness, dizziness, and weight gain. Some anticonvulsants can also cause more serious side effects, such as liver damage or birth defects.

Classification of Anticonvulsants:

Based on their mechanisms of action and chemical structures.

1. Sodium Channel Blockers:
 - Phenytoin (Dilantin)
 - Carbamazepine (Tegretol)
 - Lamotrigine (Lamictal)
 - Oxcarbazepine (Trileptal)
2. GABA Enhancers:
 - Valproate (Depakote)
 - Gabapentin (Neurontin)
 - Pregabalin (Lyrica)
 - Vigabatrin (Sabril)
3. Calcium Channel Blockers:
 - Ethosuximide (Zarontin)



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- Gabapentin (Neurontin)
- Pregabalin (Lyrica)
- 4. Glutamate Receptor Antagonists:
 - Topiramate (Topamax)
 - Felbamate (Felbatol)
- 5. GABA Transaminase Inhibitors:
 - Vigabatrin (Sabril)
- 6. Carbonic Anhydrase Inhibitors:
 - Zonisamide (Zonegran)
- 7. Miscellaneous Agents:
 - Levetiracetam (Keppra)
 - Tiagabine (Gabitril)
 - Lacosamide (Vimpat)
 - Rufinamide (Banzel)
 - Perampanel (Fycompa)



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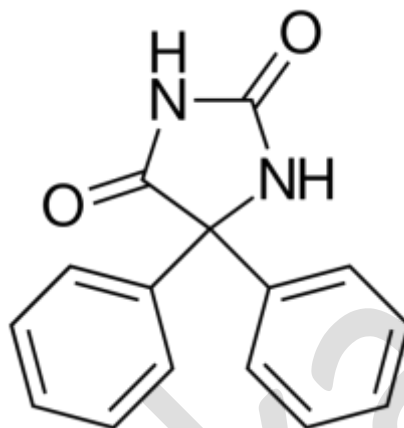
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Phenytoin:

Chemical Name:

Sodium 5,5-diphenyl-2, 4-imidazolidinedione

Chemical structure:



Uses:

- Phenytoin is a medication used in the management and treatment of epilepsy, generalized tonic-clonic seizures, complex partial seizures, and status epilepticus.

Stability and Storage Conditions

- It s be stored in the tightly closed or sealed container.

Types of Formulations:

- Tablet
- Capsule
- Oral suspension
- Injectable solution

Brand Name:

- Epanutin
- Epanutin Infatabs.



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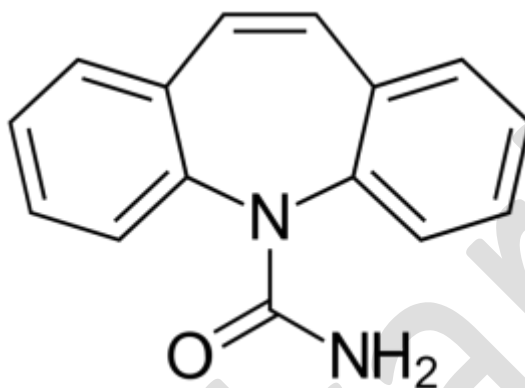
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Carbamazepine:

Chemical Name:

5H-dibenzo[b,f]azepine-5-carboxamide

Chemical Structure:



Uses:

- Carbamazepine is used to manage and treat epilepsy, trigeminal neuralgia, and acute manic and mixed episodes in bipolar I disorder.

Stability and Storage Conditions:

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

Type of Formulation:

- Tablet
- Capsule
- Oral suspension

Brand Name:

- Egretol
- Tegretol xr
- Carbatrol
- Equetro
- Epitol



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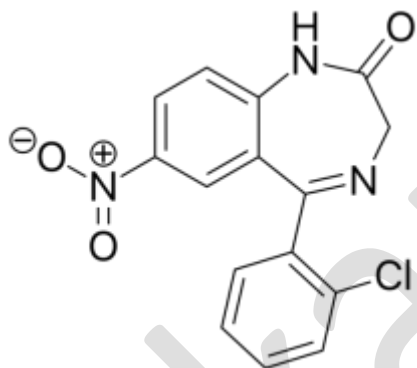
Clonazepam:

Chemical Name:

(2-Chlorophenyl)-1,3-dihydro-7-nitro-2H-1,4-benzodiazepin-2-one.

Chemical Structure:

C.F.:- C₁₅H₁₀ClN₃O₃



Uses:

- Clonazepam is a benzodiazepine drug used for the acute treatment of panic disorder, epilepsy, and nonconvulsive status epilepticus.

Stability and Storage Conditions:

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

Type of Formulation:

- Tablet
- Capsule
- Oral suspension

Brand Name:

- Klonopin



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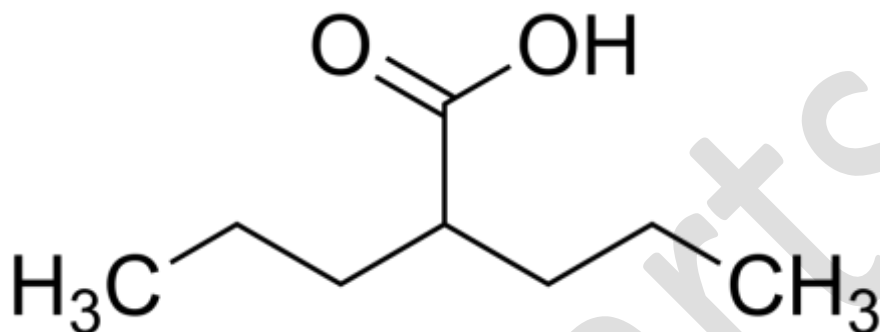
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Valproic Acid:

Chemical Name:

2-propylpentanoic acid

Chemical Structure:



Uses:

Valproic acid is usually used to treat bipolar disorder. Some brands are used to treat epilepsy. It can also be used to prevent migraine.

Stability and Storage Conditions:

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

Type of Formulation:

- Tablet
- Capsule
- Oral suspension
- Injectable solution

Brand Name:

- Belvo,
- Depakote,
- Dyzantil,
- Convulex,
- Syonell.



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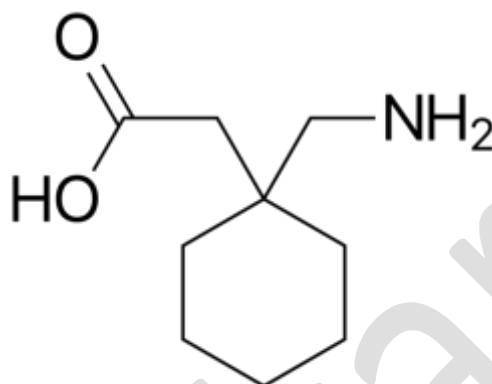
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Gabapentin*,

Chemical Name:

2-[1-(Aminomethyl)cyclohexyl]acetic acid

Chemical Structure:



Uses:

Gabapentin is an anticonvulsive medication that originally saw use as a muscle relaxer and anti-spasmodic medication, but later it was discovered it had the potential of the medication as anticonvulsive medication and as an adjunct to more potent anticonvulsants.

Stability and Storage Conditions:

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

Type of Formulation:

- Tablet
- Capsule
- Oral suspension
- Injectable solution

Brand Name:

- Horizant®
- Gralise®
- Neurontin®



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Topiramate:

Chemical Name:

2,3:4,5-Bis-O-(1-methylethylidene)-beta-D-fructopyranose sulfamate

Uses:

- Topiramate is a medication used to manage and treat epilepsy and migraine, and it is in the second-generation anti-epileptic drugs class of drugs.

Stability and Storage Conditions:

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

Type of Formulation:

- Tablet
- Capsule
- Oral suspension
- Injectable solution

Brand Name:

- Topamax

Vigabatrin:

Chemical Name: (RS)-4-aminohex-5-enoic acid

Uses:

- Vigabatrin is a medication used in the management and treatment of infantile spasms and refractory complex partial seizures.

Stability and Storage Conditions:

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

Type of Formulation:

- Tablet
- Capsule
- Oral suspension

Brand Name:

- Sabril



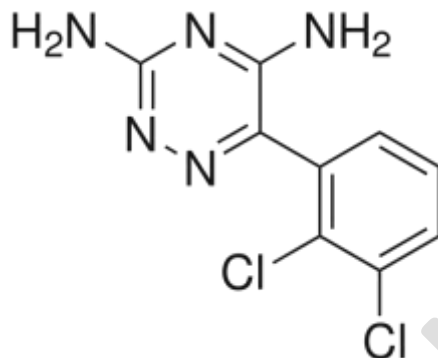
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Lamotrigine:

Chemical Name: 3,5-diamino-6-(2,3-dichlorophenyl)-as-triazine

Chemical Structure:



Uses:

- Lamotrigine can be used to treat the following partial seizures, primary generalized tonic-clonic seizures, bipolar I disorder maintenance and Lennox-Gastaut syndrome.

Stability and Storage Conditions:

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

Type of Formulation:

- Tablet
- Capsule
- Oral suspension

Brand Name:

- Lamictal



Anti-Depressants: Amitriptyline Hydrochloride*, Imipramine Hydrochloride*, Fluoxetine*, Venlafaxine, Duloxetine, Sertraline, Citalopram, Escitalopram, Fluvoxamine, Paroxetine

Anti-Depressants:

- Antidepressants are a class of medications used to treat depression and other mental health conditions.
- They work by increasing the levels of certain neurotransmitters in the brain, such as serotonin, norepinephrine, and dopamine.

Classification of Anti-Depressants:

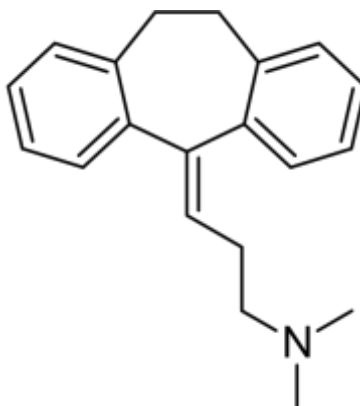
- Reversible inhibitors of MAO-A (RIMAs):** Moclobemide, Clorgyline
- Tricyclic antidepressants (TCAs):**
 - NA + 5-HT reuptake inhibitors: Imipramine, Amitriptyline, Trimipramine, Doxepin, Dothiepin, Clomipramine
 - Predominantly NA reuptake inhibitors: Desipramine, Nortriptyline, Amoxapine, Reboxetine
- Selective serotonin reuptake inhibitors (SSRIs):** Fluoxetine, Fluvoxamine, Paroxetine, Sertraline, Citalopram, Escitalopram
- Atypical antidepressants:** Trazodone, Mianserin, Mirtazapine, Venlafaxine, Duloxetine, Tianeptine, Amineptine, Bupropion
- 5-HT₂Antagonists:** trazodone and nefazodone

Amitriptyline Hydrochloride:

Chemical Name:

3-(10,11-dihydro-5H-dibenzo[a,d]cycloheptene-5-ylidene)-N,N-dimethylpropan-1-amine

Chemical Structure:



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Uses:

- Amitriptyline is a medicine used for treating pain. You can take it: to treat nerve pain (neuralgia) and back pain. to help prevent migraine attacks.

Stability and Storage Conditions:

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

Type of Formulation:

- Tablet
- Capsule
- Oral suspension

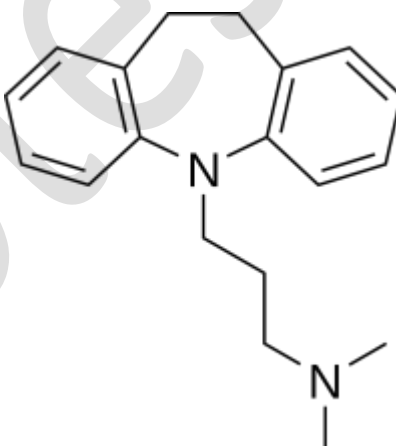
Brand Name:

- Elavil

Imipramine Hydrochloride:

Chemical Name: 3-(10,11-dihydro-5H-dibenzo[b,f]azepin-5-yl)-N,N-dimethylpropan-1-amine

Chemical Structure:



Uses:

Imipramine is a medication used in the treatment of depression and anxiety.

Stability and Storage Conditions:

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



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Type of Formulation:

- Tablet
- Capsule
- Oral suspension

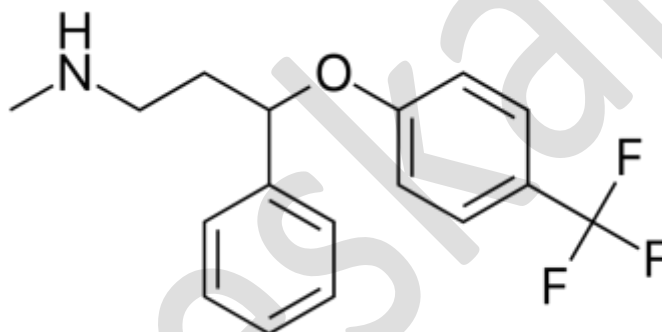
Brand Name:

- Tofranil

Fluoxetine*,

Chemical Name: N-methyl-3-phenyl-3-[4-(trifluoromethyl)phenoxy]propan-1-amine

Chemical Structure:



Uses:

- Fluoxetine is also sometimes used to treat alcoholism, attention-deficit disorder, borderline personality disorder
- Fluoxetine is used to treat depression, obsessive-compulsive disorder (OCD), bulimia nervosa, premenstrual dysphoric disorder (PMDD)

Stability and Storage Conditions:

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

Type of Formulation:

- Tablet
- Capsule
- Oral suspension

Brand Name:

- Prozac



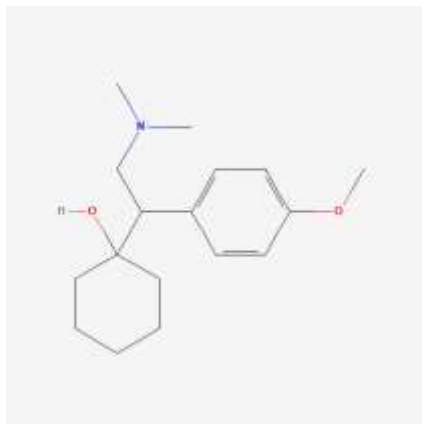
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Venlafaxine,

Chemical Name: 1-[2-(dimethylamino)-1-(4-methoxyphenyl)ethyl]cyclohexanol

Chemical Structure:



Uses:

- It is used to treat and manage symptoms of depression, social anxiety disorder, and cataplexy.

Stability and Storage Conditions:

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

Type of Formulation:

- Tablet
- Capsule

Brand Name:

- Vensir
- Vencarm
- Venlalix
- Efexor
- Venlablue



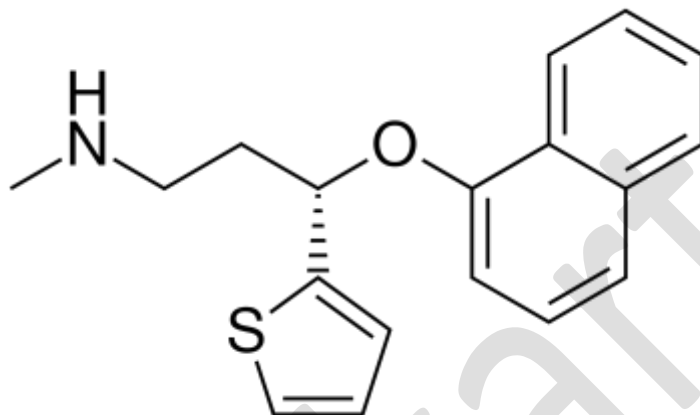
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Duloxetine,

Chemical Name: (3S)-N-methyl-3-naphthalen-1-yloxy-3-thiophen-2-ylpropan-1-amin hydrochloride.

Chemical Structure:



Uses:

- Duloxetine is used to treat depression in adults and generalized anxiety disorder.

Stability and Storage Conditions:

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

Type of Formulation:

- Tablet
- Capsule

Brand Name:

- Cymbalta,
- Yentreve.



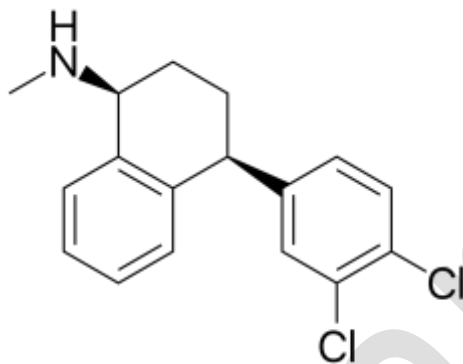
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Sertraline,

Chemical Name: (1S,4S)-4-(3,4-Dichlorophenyl)-N-methyl-1,2,3,4-tetrahydronaphthalen-1-amine

Chemical Structure:



Uses:

Sertraline is used to treat depression, obsessive-compulsive disorder (bothersome thoughts that won't go away and the need to perform certain actions over and over), panic attacks (sudden, unexpected attacks of extreme fear and worry about these attacks), posttraumatic stress disorder (disturbing psychological symptoms)

Stability and Storage Conditions:

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

Type of Formulation:

- Tablet
- Capsule

Brand Name:

- Zoloft



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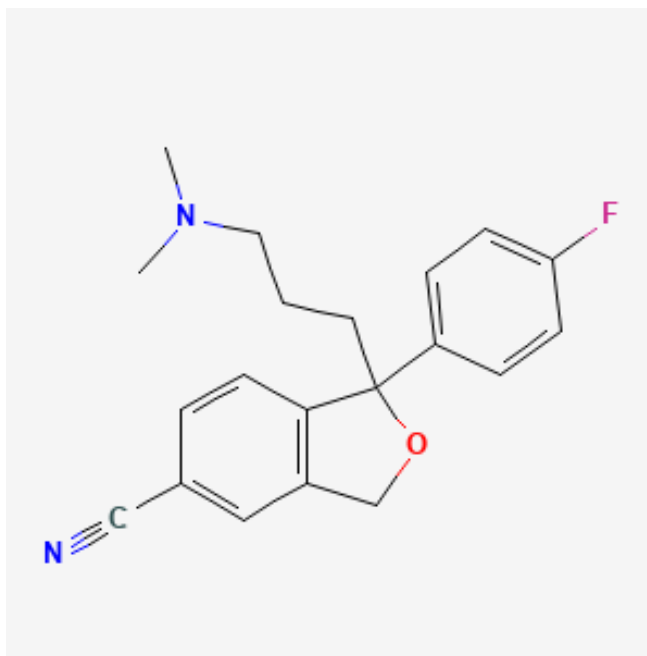
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Citalopram,

Chemical Name:

(RS)-1-[3-(Dimethylamino)propyl]-1-(4-fluorophenyl)-1,3-dihydroisobenzofuran-5-carbonitrile

Chemical Structure:



Uses:

- Citalopram is used to treat depression.
- Citalopram is also sometimes used to treat obsessive-compulsive disorder
- Citalopram is also used to treat major depressive disorder (MDD)

Stability and Storage Conditions:

Citalopram tablets should be stored at room temperature. This drug should be kept away from high temperatures.

Type of Formulation:

- Tablet
- Oral Solution

Brand Name:

- Celexa



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Escitalopram,

Chemical Name:

1-[3-(dimethylamino)propyl]-1-(4-fluorophenyl)-1,3-dihydro-2-benzofuran-5-carbonitrile

Uses:

- Escitalopram is used to treat depression in adults and children and teenagers 12 years of age or older.
- Escitalopram is also used to treat generalized anxiety disorder (GAD)

Stability and Storage Conditions:

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

Type of Formulation:

- Tablet
- Capsule

Brand Name:

- Lexapro

Fluvoxamine,

Chemical Name:

2-[[E)-{5-Methoxy-1-[4-(trifluoromethyl)phenyl] pentylidene} amino]oxy}ethanamine

Uses:

- It is primarily used to treat major depressive disorder and obsessive-compulsive disorder (OCD), but is also used to treat anxiety disorders

Stability and Storage Conditions:

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

Type of Formulation:

- Tablet
- Capsule

Brand Name:

- Luvox



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Paroxetine

Chemical Name:

(3S,4R)-3-[(2H-1,3-benzodioxol-5-yloxy)methyl]-4-(4-fluorophenyl)piperidine

Uses:

- It is primarily used to treat major depressive disorder and obsessive–compulsive disorder (OCD), but is also used to treat anxiety disorders

Stability and Storage Conditions:

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

Type of Formulation:

- Tablet
- Capsule

Brand Name:

- Aropax
- Paxil
- Pexeva
- Seroxat
- Sereupin
- Brisdelle

