Reserpine

**CAS Number**: 50-55-5

**Molecular Formula**: C\textsubscript{33}H\textsubscript{40}N\textsubscript{2}O\textsubscript{9}

**Molecular Weight**: 608.67 g/mol

**Systematic (IUPAC)**: methyl (1R,15S,17R,18R,19S,20S)-6,18-dimethoxy-17-[(3,4,5-trimethoxyphenyl)carbonyloxy]-3,13-diazapentacyclo[11.8.0.0\textsuperscript{2,10}.0\textsuperscript{4,9}.0\textsuperscript{15,20}]hentriaconta-2(10),4,6,8-tetraene-19-carboxylate

**Type**: small molecule
**Description**
An alkaloid found in the roots of Rauwolfia serpentina and R. vomitoria. Reserpine inhibits the uptake of norepinephrine into storage vesicles resulting in depletion of catecholamines and serotonin from central and peripheral axon terminals. It has been used as an antihypertensive and an antipsychotic as well as a research tool, but its adverse effects limit its clinical use.

**Categories**
- Antihypertensive Agents
- Adrenergic Uptake Inhibitors
- Antipsychotics
- Peripheral Adrenergic Inhibitors
- Antipsychotic Agents

**Taxonomy**

**Kingdom**: Organic

**Classes**
- Alkaloids and Alkaloid Derivatives

**Substructures**
- Carboxylic Acids and Derivatives
- Benzyl Alcohols and Derivatives
  - Acetates
- Indoles and Indole Derivatives
  - Benzoates
- Phenols and Derivatives
  - Pyrroles
- Alkaloids and Alkaloid Derivatives
  - Ethers
**Pharmacology**

**Indication**: For the treatment of hypertension

**Pharmacodynamics**: Reserpine is an adrenergic blocking agent used to treat mild to moderate hypertension via the disruption of norepinephrine vesicular storage. The antihypertensive actions of Reserpine are a result of its ability to deplete catecholamines from peripheral sympathetic nerve endings. These substances are normally involved in controlling heart rate, force of cardiac contraction and peripheral resistance.

**Mechanism of action**: Reserpine's mechanism of action is through inhibition of the ATP/Mg2+ pump responsible for the sequestering of neurotransmitters into storage vesicles located in the presynaptic neuron.
The neurotransmitters that are not sequestered in the storage vesicle are readily metabolized by monoamine oxidase (MAO) causing a reduction in catecholamines.

**Protein binding**: 62%

**Route of elimination**: Reserpine is extensively metabolized to inactive compounds. It is slowly excreted via the urine and feces.

**Toxicity**: Possible human carcinogen. May cause reproductive harm. ORL-RAT LD50 420 mg/kg; IPR-RAT LD50 44 mg/kg; IVN-RAT LD50 15 mg/kg; ORL-MUS LD50 200 mg/kg; SCU-MUS LD50 52 mg/kg; IPR-RBT LD50 7 mg/kg

**Affected organisms**: Humans and other mammals

**Uses**
Reserpine is used with or without other medications to treat high blood pressure (hypertension). Lowering high blood pressure helps prevent strokes, heart attacks, and kidney problems. It works by decreasing certain substances in the body (such as norepinephrine). This causes the blood vessels to relax so that blood can flow more easily and also slows the heart rate. These effects help to lower blood pressure.

**How To Use?**
Take this medication by mouth with or without food, usually 1 to 2 times daily or as directed by your doctor. The dosage is based on your medical condition.
and response to treatment. Do not increase your dose or take this medication more often than prescribed. The risk of serious side effects may be increased. Use this medication regularly to get the most benefit from it. To help you remember, take it at the same time each day. It may take several weeks before you get the full benefit of this medication. It is important to continue taking this medication even if you feel well. Most people with high blood pressure do not feel sick. Tell your doctor if your condition does not improve or if it worsens (for example, your routine blood pressure readings remain high or increase).

**Drug Interactions**
Your doctor or pharmacist may already be aware of any possible drug interactions and may be monitoring you for them. Do not start, stop, or change the dosage of any medicine before checking with your doctor or pharmacist first. This drug should not be used with the following medication because a very serious interaction may occur: tetrabenazine. If you are currently using the medication listed above, tell your doctor or pharmacist before starting reserpine. Before using this medication, tell your doctor or pharmacist of all prescription and nonprescription/herbal products you may use, especially of: MAO inhibitors (such as furazolidone, isocarboxazid, linezolid, moclobemide, phenelzine, procarbazine, rasagiline, selegiline, tranylcypromine). Tell your doctor or pharmacist if you are taking other products that cause drowsiness, including alcohol, antihistamines (such as cetirizine, diphenhydramine), drugs for sleep or anxiety (such as alprazolam, diazepam, zolpidem), muscle relaxants, and narcotic pain relievers (such as
codeine). Check the labels on all your medicines (such as cough-and-cold products, diet aids, nonsteroidal anti-inflammatory drugs-NSAIDs such as ibuprofen for pain/fever reduction) because they may contain ingredients that cause drowsiness or could increase your blood pressure or heart rate. Ask your pharmacist about using those products safely. If your doctor has directed you to take low-dose aspirin for heart attack or stroke prevention (usually at dosages of 81-325 milligrams a day), you should continue taking it unless your doctor instructs you otherwise. Ask your doctor or pharmacist for more details. This medication may interfere with certain urine laboratory tests (including 17-OHCS and 17-ketosteroids test), possibly causing false test results. Make sure laboratory personnel and all your doctors know you use this drug. This document does not contain all possible interactions. Therefore, before using this product, tell your doctor or pharmacist of all the products you use. Keep a list of all your medications with you, and share the list with your doctor and pharmacist.

**Why is this medication prescribed?**
Reserpine is used to treat high blood pressure. It also is used to treat severe agitation in patients with mental disorders. Reserpine is in a class of medications called rauwolfia alkaloids. It works by slowing the activity of the nervous system, causing the heartbeat to slow and the blood vessels to relax.

**How should this medicine be used?**
Reserpine comes as a tablet to take by mouth. It usually is taken once daily. Take reserpine at around the same
time every day. Follow the directions on your prescription label carefully, and ask your doctor or pharmacist to explain any part you do not understand. Take reserpine exactly as directed. Do not take more or less of it or take it more often than prescribed by your doctor.

Reserpine controls high blood pressure or symptoms of agitation, but does not cure them. Continue to take reserpine even if you feel well. Do not stop taking reserpine without talking to your doctor. If you suddenly stop taking reserpine you may develop high blood pressure and experience unwanted side effects.

**Other uses for this medicine**

Reserpine may be prescribed for other uses; ask your doctor or pharmacist for more information.

**What special precautions should I follow?**

Before taking reserpine,

- tell your doctor and pharmacist if you are allergic to reserpine, aspirin, any other medications, tartrazine (a yellow dye in some processed foods and medications), or any of the ingredients in reserpine tablets.
- tell your doctor and pharmacist what prescription and nonprescription medications, vitamins, nutritional supplements, or herbal products you are taking or plan to take. Be sure to mention any of the following: amitriptyline (Elavil); clomipramine (Anafranil) desipramine (Norpramin), digoxin (Lanoxin), doxepin (Adepin, Sinequan), ephedrine, epinephrine, imipramine (Tofranil), monoamine oxidase (MAO inhibitors such as isoxcarboxazid (Marplan), phenelzine (Nardil) selegiline (Eldepryl, Emsam, Zelapar); and
tranylcypromine (Parnate), methylphenidate (Ritalin), nortriptyline (Aventyl, Pamelor), phenylephrine, protriptyline (Vivactil), quinidine (Quinaglute), and trimipramine (Surmontil). Your doctor may need to change the doses of your medications or monitor you carefully for side effects.

tell your doctor if you have or have ever had kidney disease, gallstones, ulcers, ulcerative colitis, a history of depression, or electric shock therapy.

tell your doctor if you are pregnant, plan to become pregnant, or are breast-feeding. If you become pregnant while taking reserpine, call your doctor.

talk to your doctor about the risks and benefits of taking reserpine if you are 65 years of age or older. Older adults should not usually take high doses of reserpine because it is not as safe as other medications that can be used to treat the same condition.

if you are having surgery, including dental surgery, tell the doctor or dentist that you are taking reserpine.

you should know that this medication may make you drowsy or dizzy. Do not drive a car or operate machinery until you know how it affects you.

ask your doctor about the safe use of alcohol while you are taking reserpine. Alcohol can make the side effects from reserpine worse.

**What special dietary instructions should I follow?**

Your doctor may prescribe a low-salt or low-sodium diet. Follow these directions carefully.
What should I do if I forget a dose?
Take the missed dose as soon as you remember it. However, if it is almost time for your next dose, skip the missed dose and continue your regular dosing schedule. Do not take a double dose to make up for a missed one.

What side effects can this medication cause?
Reserpine may cause side effects. Tell your doctor if any of these symptoms are severe or do not go away:
- dizziness
- loss of appetite
- diarrhea
- upset stomach
- vomiting
- stuffy nose
- headache
- dry mouth
- decreased sexual ability

Some side effects can be serious. If you experience any of the following symptoms, call your doctor immediately:
- depression
- nightmares
- fainting
- slow heartbeat
- chest pain
- swollen ankles or feet

Reserpine may cause other side effects. Call your doctor if you have any unusual problems while you are taking this medication.

What storage conditions are needed for this medicine?
Keep this medication in the container it came in, tightly closed, and out of reach of children. Store at room temperature and away from excess heat and moisture (not in the bathroom). Throw away any medication that is outdated or no longer needed. Talk to your pharmacist about the proper disposal of your medication.

**What other information should I know?**
Keep all appointments with your doctor and the laboratory. Your blood pressure should be checked regularly to determine your response to reserpine. Your doctor may ask you to check your pulse (heart rate) daily and will tell you how rapid it should be. Ask your doctor or pharmacist to teach you how to take your pulse. If your pulse is slower than it should be, call your doctor before taking reserpine that day.

Weigh yourself every day. Call your doctor if you experience rapid weight gain.

Do not let anyone else take your medication. Ask your pharmacist any questions you have about refilling your prescription.

It is important for you to keep a written list of all of the prescription and nonprescription (over-the-counter) medicines you are taking, as well as any products such as vitamins, minerals, or other dietary supplements. You should bring this list with you each time you visit a doctor or if you are admitted to a hospital. It is also important information to carry with you in case of emergencies.

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