

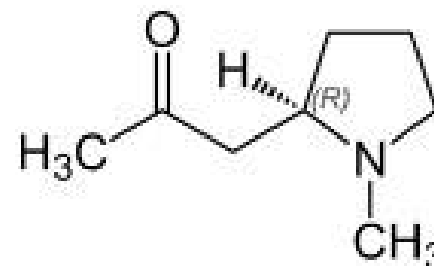
Medicinal importance of
Hygrine, Quinine, Morphine,
Cocaine & Reserpine

Hygrine

Pyrrolidine alkaloids (hygrine)

Physical Properties	
Chemical formula	C ₇ H ₉ N
Molar mass	71.12 g·mol ⁻¹
Appearance	Clear colorless liquid
Density	0.866 g/cm ³
Melting point	-63 °C (-81 °F; 210 K)
Boiling point	87 °C (189 °F; 360 K)
Solubility in water	Miscible
Acidity (pK _a)	11.27 (pK _a of conjugate acid in water)
	19.56 (pK _a of conjugate acid in acetonitrile)

It is under biosynthetic classification that are discussed slide 7 it is used as anticonvulsants.



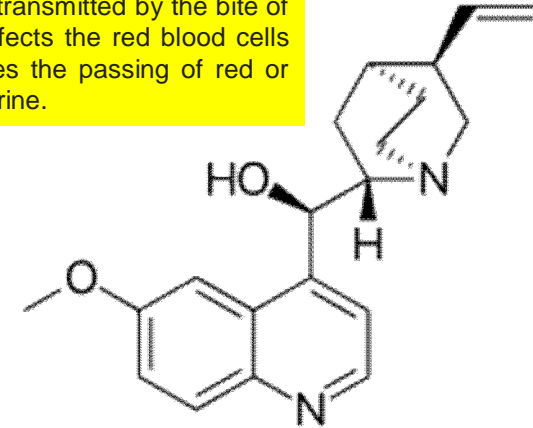
hygrine

central nervous system (neurological) disorder in which brain activity becomes abnormal, causing seizures or periods of unusual behavior, sensations, and sometimes loss of awareness.

Quinine

- **Quinine** is a medication used to treat [malaria](#) and [babesiosis](#). This includes the treatment of malaria due to [Plasmodium falciparum](#) that is resistant to [chloroquine](#) when [artesunate](#) is not available.
- While used for [restless legs syndrome](#), it is not recommended for this purpose due to the risk of side effects.
- It can be taken by mouth or used [intravenously](#). Malaria resistant to quinine occurs in certain areas of the world.
- Quinine is also the ingredient in [tonic water](#) that gives it its bitter taste.
- Common side effects include headache, [ringing in the ears](#), trouble seeing, and [sweating](#). More severe side effects include [deafness](#), [low blood platelets](#), and an [irregular heartbeat](#).
- Use can make one more prone to [sunburn](#).
- While it is unclear if use during pregnancy causes harm to the baby, use to treat malaria during pregnancy is still recommended. Quinine is an [alkaloid](#), a naturally occurring chemical compound.
- As of 2006, it is no longer recommended by the [WHO](#) (World Health Organization) as a first-line treatment for malaria, and it should be used only when [artemisinin](#) are not available
- Quinine is also used to treat [lupus](#) and [arthritis](#).

a disease of cattle and other livestock, transmitted by the bite of ticks. It affects the red blood cells and causes the passing of red or blackish urine.



- 1820 Pelletier & caventou isolated quinine from cinchona bark.
- Mechanism of action:
 - Similar to chloroquine

Artemisinin is an antimalarial lactone derived from qinghao. Artemisia annua (or sweet wormwood). The medicinal value of this plant has been known to the Chinese for at least 2,000 years.

Lupus is a long-term autoimmune disease in which the body's immune system becomes hyperactive and attacks normal, healthy tissue. Symptoms include inflammation, swelling, and damage to the joints, skin, kidneys, blood, heart, and lungs

Adverse drug reactions

Cinchonism:

- Tinnitus, nausea & vomiting
- Headache mental confusion, vertigo, difficulty in hearing & visual disturbances
- Diarrhoea , flushing & marked perspiration
- Still higher doses , exaggerated symptoms with delirium , fever, tachypnoea, respiratory depression , cyanosis.

abnormally rapid breathing.

Delirium is an abrupt change in the brain that causes mental confusion and emotional disruption. It makes it difficult to think, remember, sleep, pay attention, and more.

Myotonia congenita is a genetic disease characterized by the inability of the skeletal muscles to quickly relax after voluntary movements.

Uses

Cyanosis refers to a bluish cast to the skin and mucous membranes. It's usually caused by low oxygen levels in the red blood cells or problems getting oxygenated blood to your body

- **Malaria:**
 - uncomplicated resistant falciparum malaria
 - Cerebral malarial
- Myotonia congenita: 300 to 600 mg BD/ TDS
- Nocturnal muscle cramps: 200 – 300 mg before sleeping *active at night.
- Spermicidal in vaginal creams
- Varicose veins: along with urethane causes thrombosis & fibrosis of varicose vein mass

Varicose veins are superficial veins that have become enlarged and twisted.

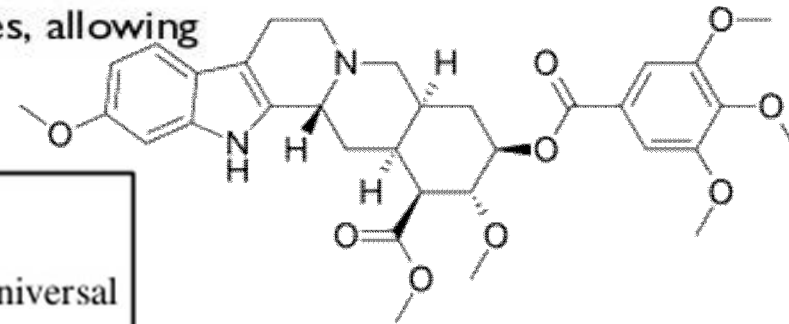
Reserpine

▶ USE:

- ▶ Reserpine: lowers BP by depleting store of catecholamine at nerve ending, prevent re-uptake of nor-epinephrine at storage sites, allowing enzymatic destruction of neuronal transmitter.
- ▶ Neuropsychiatric disorder

▶ USES

- It is used for the treatment of high blood pressure. Hence called as universal medicine for lowering blood pressure.
- It cures insomnia, hysteria and hypertension.
- It is also useful for in the treatment of cataract.
- It also cures plague and fever.
- Sarpagandha is used for the treatment of Schizophrenia.
- It is used in different countries as a sedative and tranquilizer.
- Sarpagandha is also used for rheumatism, edema and intestinal diseases.
- It is also used against constipation and dizziness.

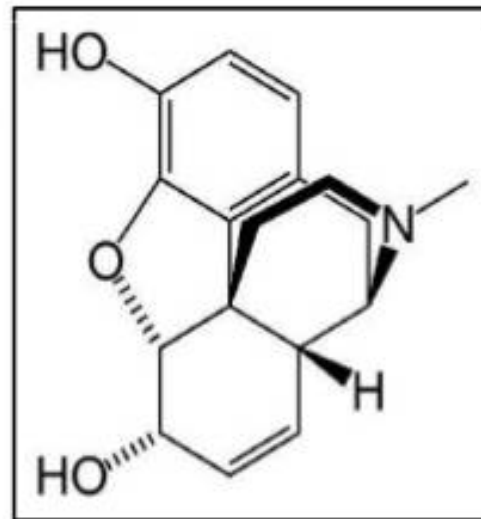


Schizophrenia is a chronic and severe mental disorder that affects how a person thinks, feels, and behaves.

Morphine

1. Most powerful analgesic used in cases of severe pain as post operative pain, bone fractures, cancer patients & in cases of angina.
2. Remedy in convulsions.
3. Precede the use of anesthetics to increase their efficacy
4. Used as an antagonists for poisonous effects of other alkaloids as strychnine, atropine, phytostigmine.

Dose: Morphine Sulfate parentally is 10mg 6 / day.



- ▶ **Morphine:** potent analgesic, due to central narcotic effects, causes addiction. Severe pain or when patient does not show response to other narcotic
- ▶ Sedates cerebrum and medulla → respiration, emetic & cough reflex center
- ▶ Triggers Chemo receptor trigger zone → nausea, vomiting
- ▶ Respiratory depression ad constipation

Angina is a type of chest pain caused by reduced blood flow to the heart.

make them sleep by administering a sedative drug

MORPHINE

- ▶ Morphine is the most abundant opiate found in opium, the dried latex extracted by shallowly scoring the unripe seedpods of the *Papaver somniferum* poppy. Morphine was the first active principle purified from a plant source and is one of at least 50 alkaloids of several different types present in opium.
- ▶ Morphine is an opioid analgesic drug. Morphine has a high potential for addiction; tolerance and psychological dependence develop rapidly, although physiological dependence may take several months to develop.



USES

- ▶ Relief of pain caused by heart attack or myocardial infarction.
- ▶ Relief of the severe bone and joint pain associated with sickle cell crisis.
- ▶ Pain relief before, during and after surgery.
- ▶ General anesthesia to sedate a patient.
- ▶ A cough suppressant in cases where cough is severe enough.

What is Cocaine?

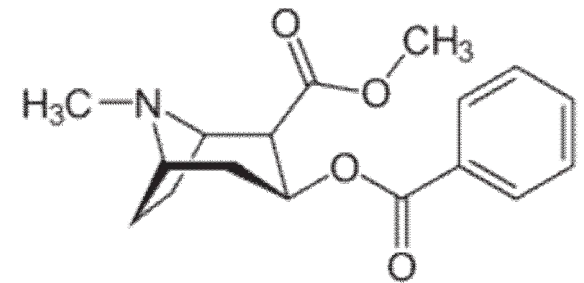
- Cocaine (benzoyl-methyl-ecgonine) (C₁₇H₂₁NO₄) is a colorless, odorless, crystalline alkaloid with bitter taste prepared from the leaves of the **Erythroxylon coca** plant.
- Which grows in South America, India and Java.



- According to the National Institute of Drug Abuse (NIDA), cocaine is: "A powerfully addictive drug that can be sniffed, injected, chewed or smoked"
- Cocaine has been classified as a Schedule II drug by the United States

DANGER LIST
A new way of looking at drugs

Cocaine



When given locally

- Cocaine produces anesthesia by inhibiting excitation of nerve endings or by blocking conduction in peripheral nerves.
- This is achieved by reversibly binding to and inactivating sodium channels.
- Sodium influx through these channels is necessary for the depolarization of nerve cell membranes and subsequent propagation of impulses along the course of the nerve.



- When a nerve loses its ability to propagate an impulse, the individual loses sensation in the area supplied by the nerve.
- Desensitizes the terminal nerves and causes vasoconstriction at the site of local application.

narrowing of the blood vessels

relieving pain without dealing with the cause of the condition

Therapeutic Uses of Cocaine

- Cocaine is used by health care professionals to temporarily numb the lining of the mouth, nose, and throat (mucous membranes) before certain medical procedures (e.g., biopsy, stitches, wound cleaning).
- It is an anesthetic that works quickly to numb the area about 1-2 minutes after application.
 - Cocaine also causes blood vessels to narrow, an effect that can decrease bleeding and swelling from the procedure.
 - It is also sometimes used in palliative care of terminally ill patient

- Topical cocaine can be used as a local [numbing agent](#) to help with painful procedures in the mouth or nose.
- Cocaine is now predominantly used for nasal and [lacrimal duct](#) surgery.
- The major disadvantages of this use are cocaine's potential for [cardiovascular](#) toxicity, [glaucoma](#), and [pupil dilation](#). Medicinal use of cocaine has decreased as other synthetic local anesthetics such as [benzocaine](#), [proparacaine](#), [lidocaine](#), and [tetracaine](#) are now used more often.
- If vasoconstriction is desired for a procedure (as it reduces bleeding), the anesthetic is combined with a vasoconstrictor such as [phenylephrine](#) or [epinephrine](#). Some [ENT](#) specialists occasionally use cocaine within the practice when performing procedures such as nasal [cauterization](#).
- In this scenario dissolved cocaine is soaked into a ball of cotton wool, which is placed in the nostril for the 10–15 minutes immediately before the procedure, thus performing the dual role of both numbing the area to be cauterized, and vasoconstriction.
- Even when used this way, some of the used cocaine may be absorbed through oral or nasal mucosa and give systemic effects. An alternative method of administration for ENT surgery is mixed with [adrenaline](#) and [sodium bicarbonate](#), as [Moffett's solution](#).

Glaucoma is a condition that causes damage to your eye's optic nerve and gets worse over time.

Cauterization (or **cauterisation**, or **cautery**) is a medical practice or technique of burning a part of a body to remove or close off a part of it.