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Chemistry

SUB. CODE- BSCC2402

For B.Sc. 4th Semester

(Alkaloids) **Module-VI**

Medicinal properties of some Alkaloids

By
Dr. Rosy Mallik
Assistant Professor,
CENTURION UNIVERSITY OF TECHNOLOGY AND MANAGEMENT,
ODISHA



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Medicinal properties of some Alkaloids

1. Cocaine : ($C_{17}H_{21}NO_4$)

Occurance:

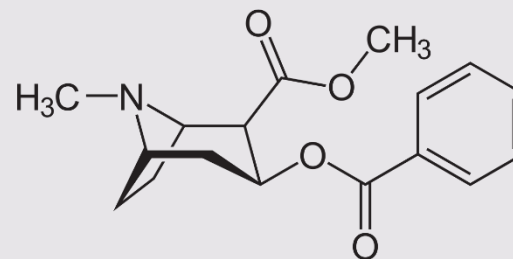
Cocaine is a powerfully addictive stimulant drug made from the leaves of the **coca plant** native to South America.

Properties:

It is a sparingly water soluble crystalline base (M.P. 98 °C) and laevorotatory ($[\alpha]_D = -16^\circ$).



Coca plant



Cocaine



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Cocaine: ($C_{17}H_{21}NO_4$)

Uses:

- It has paralyzing effect on sensory nerve endings. Hence used as a local anesthetic agent.
- It causes dilation of pupils by central and peripheral stimulation of pupilo-dilator system.
- It produces a condition of euphoria (feeling of happiness).
- A strong narcotic and habit forming on prolonged use.
- Used as a stimulant.
- It is highly toxic.



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2. Quinine ($C_{20}H_{24}N_2O_2$)

Occurance:

Quinine is obtained from cinchona bark native to South America. It occurs along with other alkaloids such as, cinchonine, cuprene, hydroquinine etc.

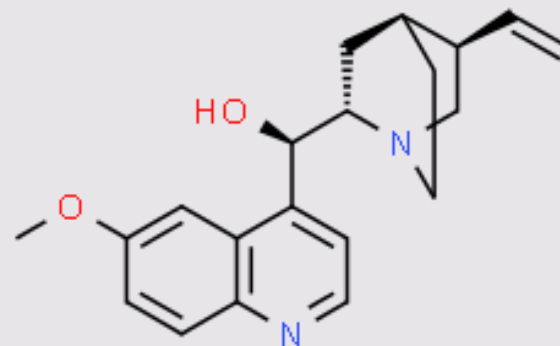
Properties:

It is a white solid (M.P. $177\text{ }^{\circ}\text{C}$) having a bitter taste. It is insoluble in water but soluble in organic solvents.

It is laevorotatory ($[\alpha]_D = -158.2^{\circ}$).



Cinchona officinalis



Quinine



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2. Quinine ($C_{20}H_{24}N_2O_2$)

Uses:

- Quinine is a medication used to treat malaria and babesiosis.
- It is used in the treatment of malaria due to *Plasmodium falciparum* that is resistant to chloroquine.
- Also used for restless legs syndrome.



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3. Morphine ($C_{17}H_{19}NO_3$):

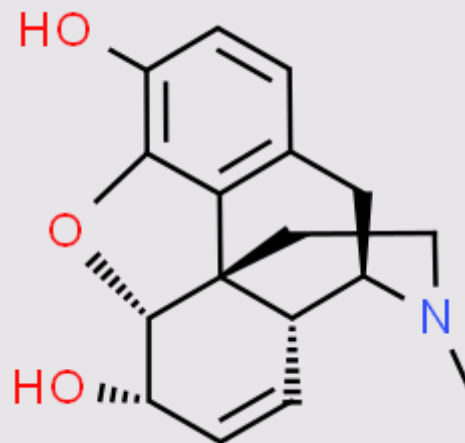
Occurance:

Morphine is the most abundant opiate found in *Papaver somniferum* (the opium poppy).

Properties:

It is crystallized from ethanol as colourless prisms (M.P. 254 °C) having a bitter taste. It is slightly soluble in water but soluble in alkalies due to phenolic –OH group.

It is laevorotatory ($[\alpha]_D = -131^\circ$).





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3. Morphine ($C_{17}H_{19}NO_3$):

Uses:

- **Morphine** belongs to a class of drugs known as opioid (narcotic) analgesics
- Its hydrochloride is used as a sedative and analgesic.
- Morphine is used to treat moderate to severe pain.
- It should not be taken if severe asthma or breathing problems are pre-existing.



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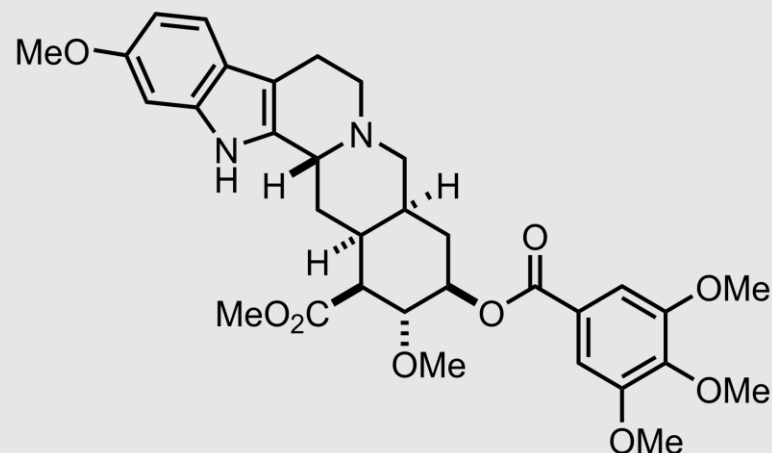
4. Reserpine ($C_{33}H_{40}N_2O_9$):

Occurance:

Reserpine, drug derived from the roots of certain species of the tropical **plant** Rauwolfia. The powdered whole root of the Indian shrub Rauwolfia serpentine.



Rauwolfia serpentine



Reserpine



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4. Reserpine ($C_{33}H_{40}N_2O_9$):

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**.
- Sideeffects:
Drowsiness, dizziness, tiredness, nausea, vomiting, diarrhea, slow heartbeat, and stuffy nose may occur.



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References

1. K.D Sharma and Y. R. Sharma, Kalyani Publishers, Unit-III page-310;
2. University Chemistry, Vol-IV, Dr. U. N. Dash, Dr. K. K. Ojha, Himalaya Publishing house, Unit V, page-405