

PHARMACOGNOSY

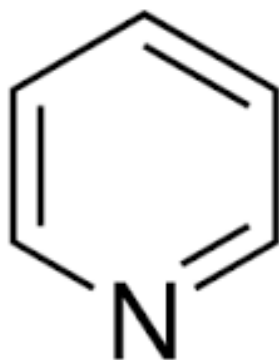
LEC 3

Alkaloid

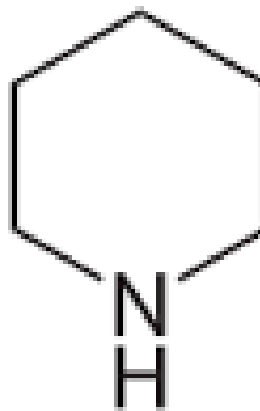
PYRIDINE-PIPERIDINE ALKALOIDS

On reduction, the tertiary base, pyridine, is converted into the secondary base, piperidine.

These two nuclei form the basis of this group.



pyridine

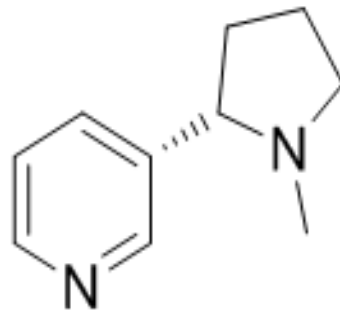


piperidine

NICOTINE

Pyridine piperidine alkaloids

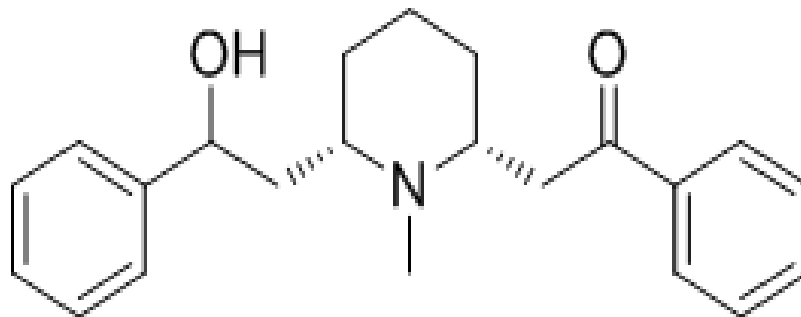
Nicotine is the alkaloid found in *Nicotiana tabacum* is responsible for the addictive nature of cigarettes. The compound has a pyrrole ring attached to pyridine ring. Pharmaceutically, nicotine is formulated into chewing gum as an aid to cessation of smoking in products such as *Nicorette*.



Nicotine

Lobeline

Is the piperidine alkaloid found in the leaves and tops of *Lobelia inflata*. The plant is known as wild tobacco. It has similar effect to those of nicotine and has been used as smoking deterrent

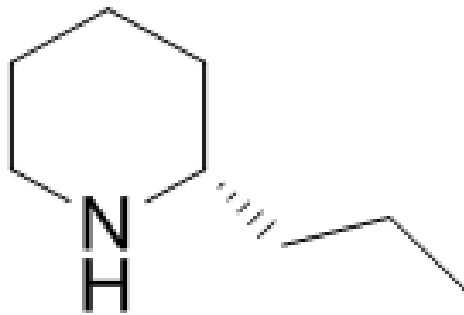


Lobeline



Connine

The European plant hemlock (*conium maculatum*, Apiaceae) produces the highly poisonous piperidine alkaloid coniine, which has an alkyl side chain at the 2-position of the piperidine ring. This plant is famous as it was used to execute the Greek philosopher Socrates.

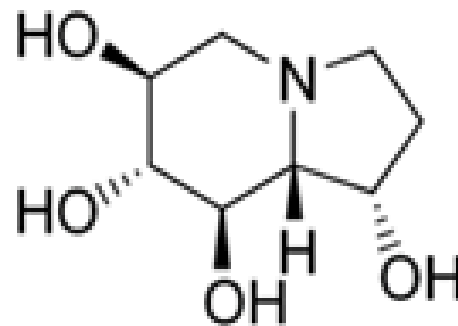


Coniine



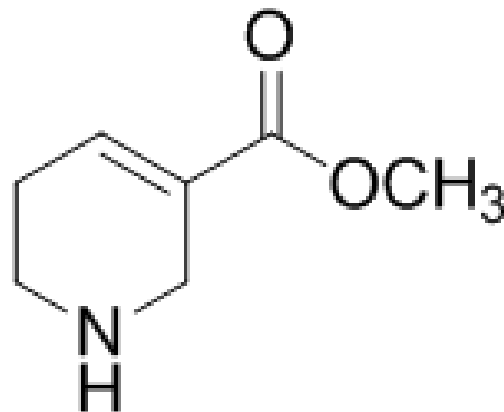
Castanospermine

This alkaloid (anti HIV) is an inhibitor of α -glucosidase, an enzyme involved in glycoprotein processing which is important in the formation of viral coating. This polyhydroxy alkaloid is a sugar analogue, which explain its activity against the glucosidase enzymes



Arecoline

In India, large quantities of betel nuts (*Areca catechu*, Palmae) are consumed by farm workers for their stimulant properties and to alleviate fatigue. The nuts are red due to presence of tannins, which causes staining of the teeth. These nuts are addictive. Arecoline like nicotine binds to the nicotinic receptors and has a stimulant effect on the CNS.



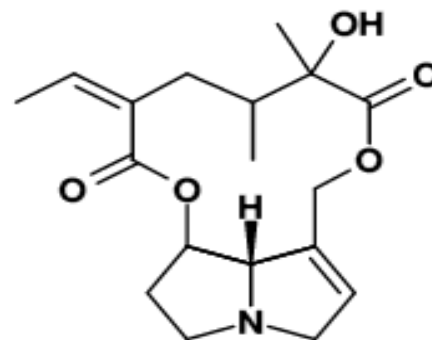
Arecoline

- Areca contain several alkaloids that are piperidine alkaloids.
- Among them are arecoline, arecaidine, guvacine, and guvacoline.
- Arecoline, the most abundant and physiologically most active alkaloids which is a liquid occurring.
- Areca is classified as an anthelmintic in veterinary practice.



SENECIONINE

- Is a member of pyrrolizidine class of alkaloids which have hepatotoxic properties.
- These compounds possess a reactive carbon, which is readily alkylated by reactive thiol groups present in many enzymes found in liver. This accounts for the withdrawal of comfrey (*Symphytum officinale*, Boraginaceae) which contain this alkaloid.



Senecionine

Thank you for listening^{sq}