

Pharmacognosy III

Lec. 5

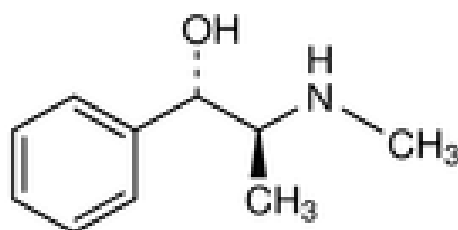
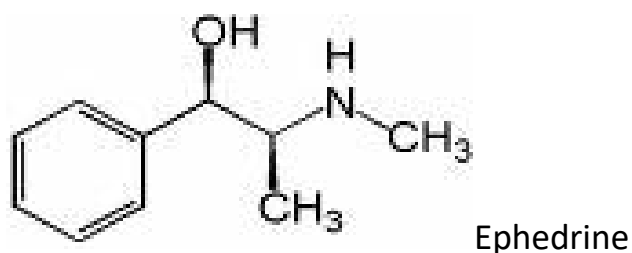
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Protoalkaloids (biological amine)

- The alkaloids in this group do not contain heterocyclic nitrogen atoms.
- The nitrogen at the side chain.
- They are derived from the common amino acids, phenylalanine or tyrosine.
- Some of the alkaloids in this category whose biosynthesis has been studied using labeled precursor include mescaline, ephedrine, cathinone and colchicine.

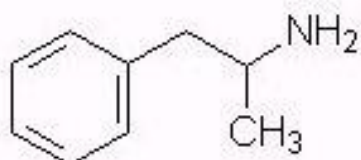
Ephedrine

- ❖ Ephedrine is derived from *Ephedra sinica*, Fam. Gnetaceae.
- ❖ Ephedrine possess CNS stimulatory, vasoconstrictor and bronchodilatory properties.
- ❖ Ephedrine has two stereogenic (chiral) centers and therefore has four possible isomer.
- ❖ Ephedrine used for severe asthma while pseudoephedrine is used in cough preparation for its bronchodilatory properties.

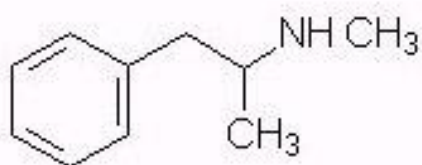


Pseudoephedrine (isomer) less stimulant in effect

Herbal *Ephedra* has recently gained notoriety as herbal ecstasy due to the high similarity in structure of ephedrine and ecstasy, these herbal preparations are dangerous and should therefore be avoided.



Amphetamine



Methamphetamine

**This is why the
sale of
pseudoephedrine
may be banned....**

**ephedrine is
already tightly
controlled**

Colchicine

- ❖ An alkaloid obtained from various species of *Colchicum* Fam. Liliaceae.
- ❖ Colchicine has one nitrogen atom which is a part of amide group, which means it can't be protonated so lacks basicity and does not form a well-defined series of salts as do other alkaloids.
- ❖ Nevertheless, it is precipitated by many alkaloid reagents and is conventionally considered an alkaloid.
- ❖ Colchicine used in the treatment of gout, it is highly cytotoxic and antimitotic.

Mescaline

- Mescaline is the biologically active natural product present in cactus peyote which is responsible for its hallucinogenic property.
- Ingestion of pure mescaline fails to give the same response as consumption of peyote which is possibly due to the contribution of other compounds present in the plant material.

