Protoalkaloids (biological amine)

- The nitrogen is outside the heterocyclic ring.
- 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 colchicin.
Ephedrine

- Ephedrine is derived from *Ephedra sinica, Gnetaceae*.
- Ephedrine possess CNS stimulatory, vasoconstrictor and bronchodilatory properties.
- Ephedrine has two stereogenic (chiral) centres and therefore has four possible isomer.
- Ephedrine used for sever asthma while pseudoephedrine is used in cough preparation for it’s bronchodilatory properties.
Ephedrine

Pseudoephedrine (isomer)
less stimulant in effect

Note - the nitrogen is in the side chain, not the heterocyclic ring!

Ephedra sinica, Ma Huang
• 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. This is why the sale of pseudoephedrine may be banned....ephedrine is already tightly controlled
Mescaline

• Mescaline is the biologically active natural product present in cactus peyote which is responsible for it’s 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.
• Colchicine used in the treatment of gout, it is highly cytotoxic and antimitotic.
Imidazole alkaloids

Pilocarpine is a cholinergic agent and is used to stimulate muscarinic receptors of the eye in the treatment of Glaucoma.
Thank you for listening
The end