

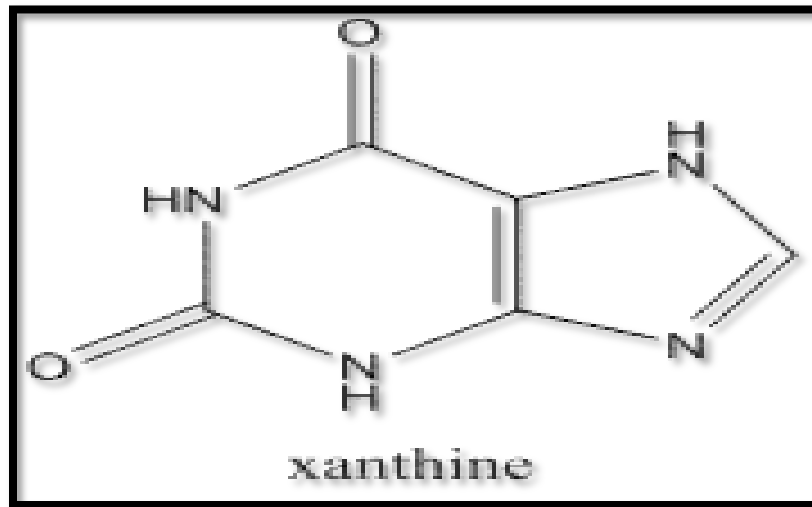
PHARMACOGNOSY
3RD CLASS, 2ND SEMESTER
DR. RAND A. KAREEM

PURINE ALKALOIDS



Introduction

- ❖ Purines nucleus is a heterocyclic nucleus consisting of pyrimidine ring fused to 5-membered imidazole ring known as xanthine.



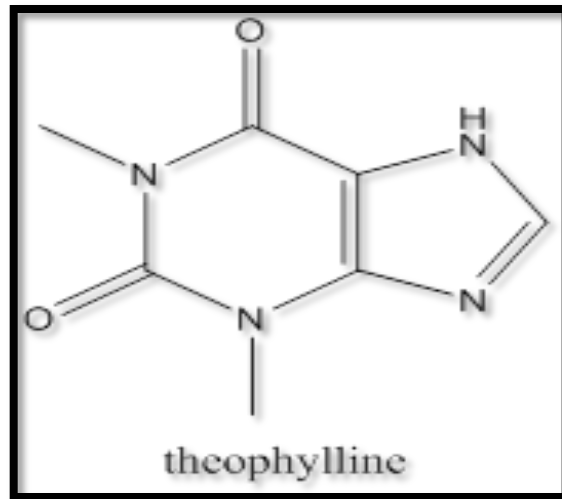
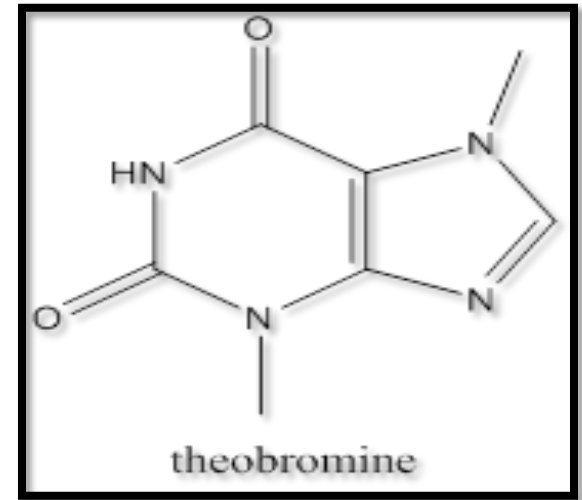
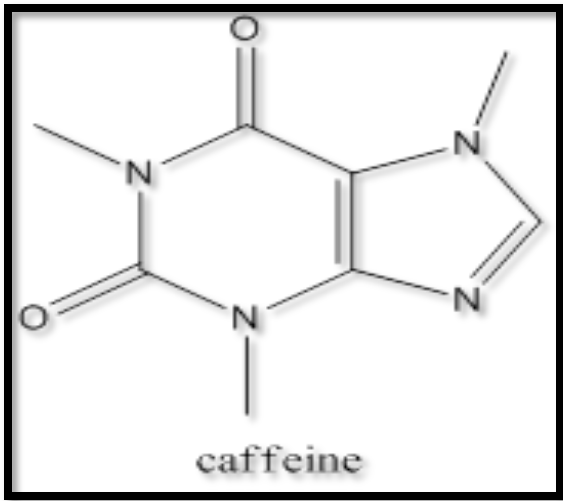
Cont...

- ❖ **Amphoteric Character**

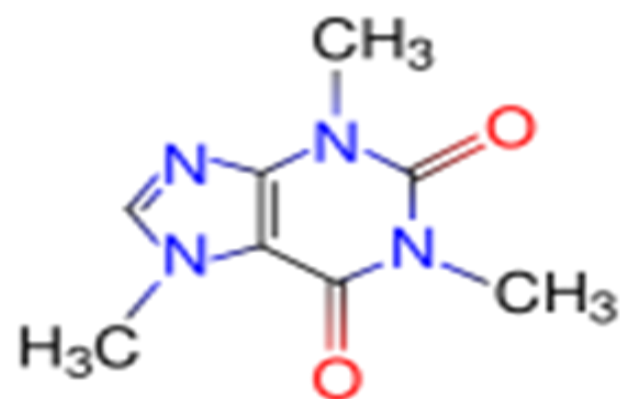
- ❖ Purines unlike other alkaloids do not give positive results with general tests of alkaloids; instead murexide test (**Purple Color**) is used in its identification.

- ❖ Purines are present as methylated compound, which are:-

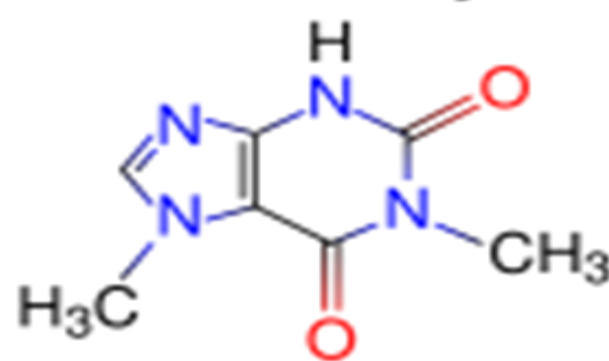
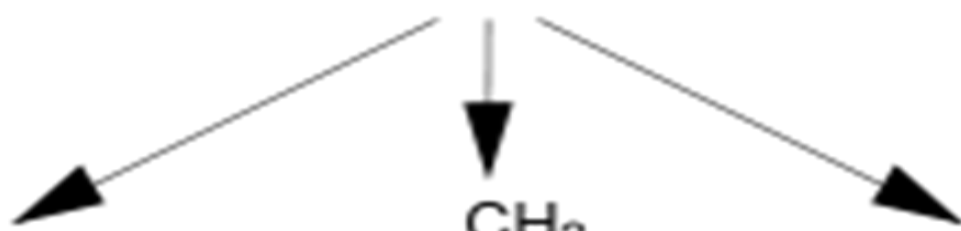
- 1) Caffeine (1, 3, 7-tri methylxanthine).
- 2) Theophylline (1, 3,-dimethylxanthine).
- 3) Theo bromine (3, 7-dimethylxanthine).



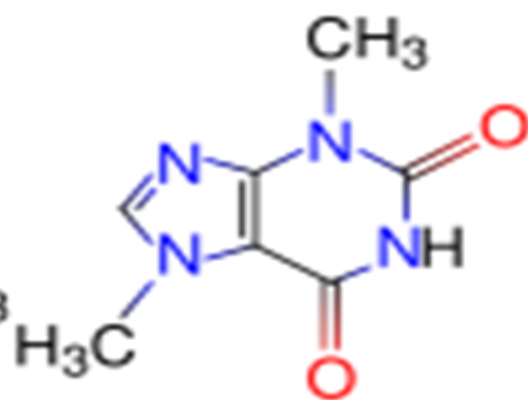
- ❖ **Caffeine:** stimulates CNS and has a weak diuretic action.
- ❖ **Theobromine:** opposite action.
- ❖ **Theophylline:** relaxes involuntary muscles more effectively than caffeine or theobromine
- ❖ **Caffeine:** does not precipitate like most alkaloids.



Caffeine



Paraxanthine
(84%)



Theobromine
(12%)



Theophylline
(4%)

Generally the pharmacological activities of the Purine Alkaloids

- 1) Stimulation of the CNS.
- 2) Diuretic effect.
- 3) Increase gastric acid secretion.
- 4) Relaxation of the bronchial smooth muscle (theophylline).
- 5) Positive inotropic and chronotropic effect on the heart.

The most important plants in this group are:-

- 1) Coffee (*Coffea arabica* of the family Rubiaceae) contain about 1-2% of caffeine.
- 2) Tea (*Camellia sinensis* of the family Theaceae) contain about 1-4% of caffeine.
- 3) Cola (*Cola nitida* of the family Sterouliaceae) contain about 3.5% of caffeine.