1)

De Novo Pyrimidine Synthesis

$2ATP + CO_2 + Glutamine$

↓ carbamoyl phosphate Synthetase-II

Carbamoyl Phosphate

↓ Aspartate transcarbamoylase

Carbamoyl aspartate

↓ Dihydroorotase

Dihydro orotate

↓ Dihydroorotate dehydrogenase

Orotate

↓ orotate phosphoribosyl transferase

Orotidine 5'-monophoshate (OMP)

↓ OMP decarboxylase

Uridine 5'-monophosphate

Degradation of Pyrimidines:-

Degraded to highly soluble products

1) β-alanine
3) CO_2
2) NH_3

(2)

Difference b/w CPS-1 and CPS-II

	CPS-1	CPS-II
Localization in cell	Mitochondria	Cytoplasm
Metabolic Pathway	Synthesis of urea	Synthesis of pyrimidine
Source of Nitrogen	Ammonia	Glutamin
Regulation	Activation: N-acetylglutamate	Activation : ATP Inhibition : UTP

(3)

Orotic Aciduria

It is autosomal recessive disease caused by deficiency of eithe oxatate phosphoribosyltrasase or OMP decarboxylase enzymes.

Feature:

Excretion of orotic acid in Urine
Megaloblastic Anemia
Poor growth.

Treatment

Administration of Uridine improve the Symptoms.

Salvage Pathway for Purine

The free purine (adenine, guanine and hypoxanthine) are formed in the normal turnover of nucleic acid and also obtained from dietary sources. The purines are directly converted to corresponding nucleotides. This is known as salvage pathway.

Adenine —(Adenine phosphoribosyl transferase; PRPP → PPi)→ AMP

Guanine —(Hypoxanthine-guanine Phospho-ribosyl transferase; PRPP → PPi)→ GMP

Hypoxanthine ⟶ IMP (Inosine-monophosphate)

Site

It is found in Brain

Gout

It is the metabolic disease associated with overproduction of uric acid.

Cause:

In severe hyperuricemia, crystal of "Sodium urate" get deposite in soft tissue and in joints. This cause inflammation in joints.

Feature:

Big toe of foot Swelled
Pain
Redness

Types

1) Primary Gout — Inborn error
2) Secondary Gout

Treatment:

1) Allo-purinol
2) Anti-inflammatory.

Lesch Nyhan Syndromve

It is the condition characterized by the overproduction of uric acid in the body. It mostly occours in male.

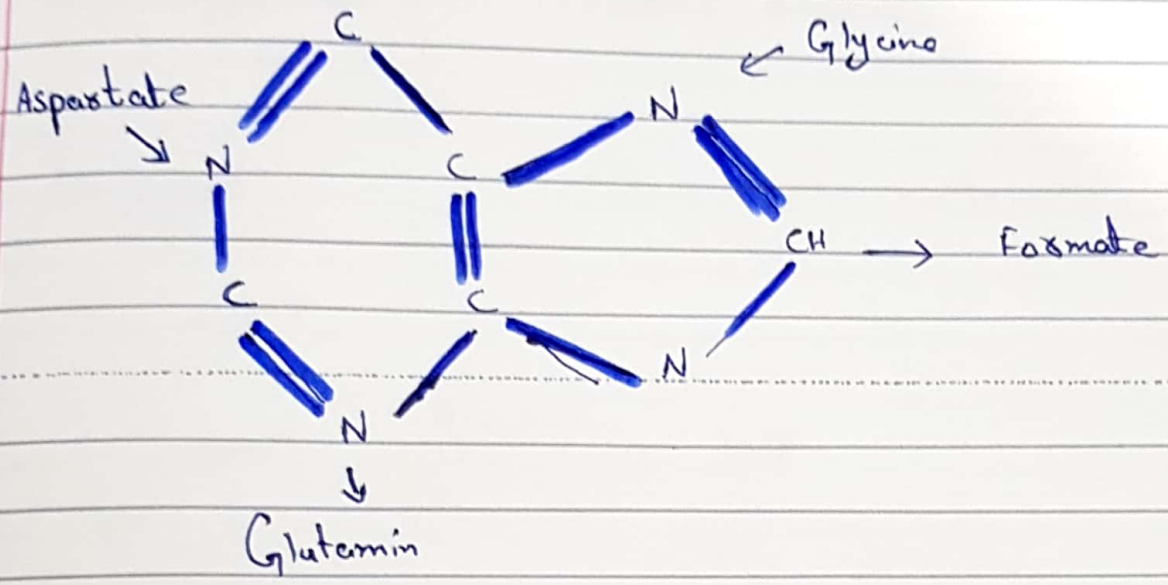
Cause:

Deficiency of hypoxanthine- guanine phosphoribosyl transferase (HGPRT) an enzyme of purine.

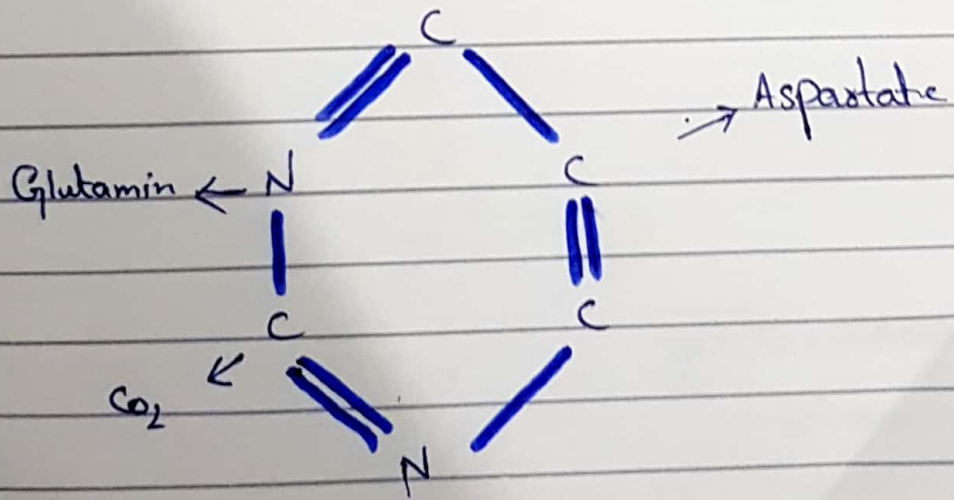
Symptoms:-

Mental Retraction
Learning Disability
Aggresive behaviours

Structure of Purine with Sources:-



Structure of Pyrimidine

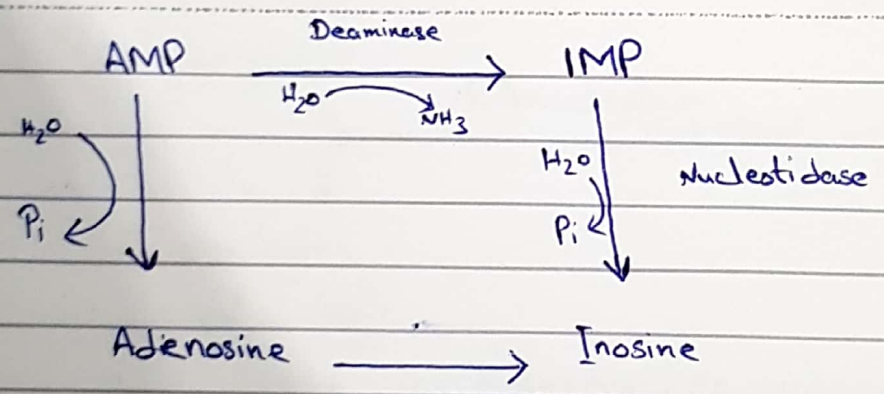


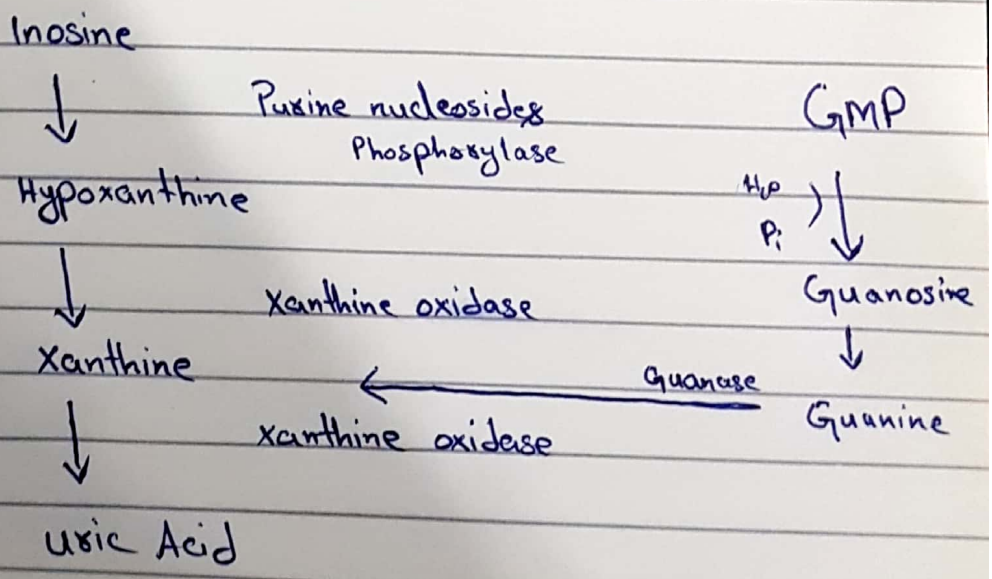
Degradation of Purine Nucleotides

Site: occours in small intestine

End Product: Uric Acid

Enzyme: Pankaryotic nucleoses.





Formation / Conversion of Deoxyribonucleotide from Ribonucleotide

Enzyme:

Ribonucleotide Reductase

Reaction: