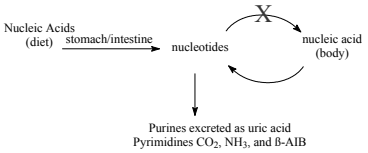
Overview of Nucleotide Catabolism

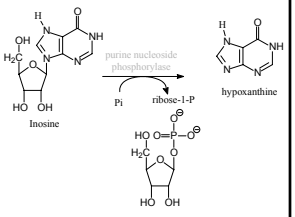


Ingested nucleotides are not incorporated into nucleic acids

Normal nucleic acid turnover

AMP Catabolism

- Occurs in liver, kidney and small intestine
- First step is cleavage of phosphate group
- Then deamination occurs
- Followed by sugar "hydrolysis" with phosphate



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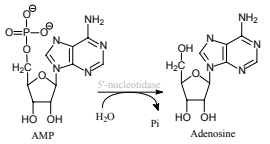
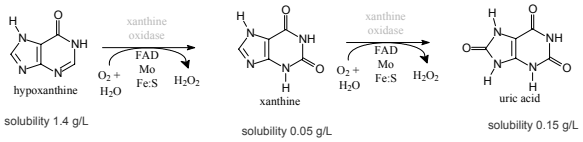


Xanthine is Oxidized to Uric Acid (decreases solubility)



solubility 1.4 g/L

solubility 0.05 g/L

solubility 0.15 g/L

AMP Catabolism

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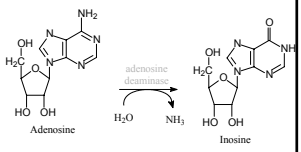
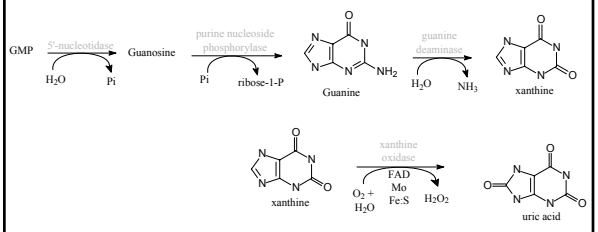
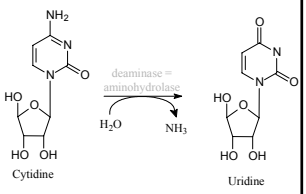


GMP Catabolized by Analogous Pathway, but One Fewer Oxidations are Required



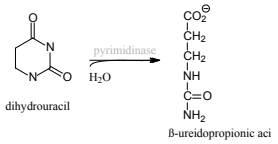
Pyrimidines are Catabolized Similarly, but Further

First deaminated…



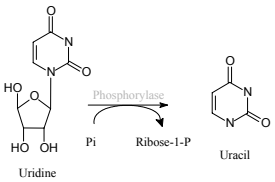
Pyrimidines are Catabolized Similarly, but Further

First deaminated…
…then phosphorylized…
…and reduced…
…and hydrolyzed…



Pyrimidines are Catabolized Similarly, but Further

First deaminated…
…then phosphorylized…



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First deaminated…
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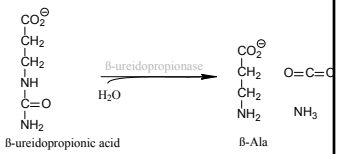
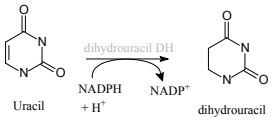


Pyrimidines are Catabolized Similarly, but Further

First deaminated…
…then phosphorylized…
…and **reduced**…



Thymine Catabolism Differs Only in Final Product