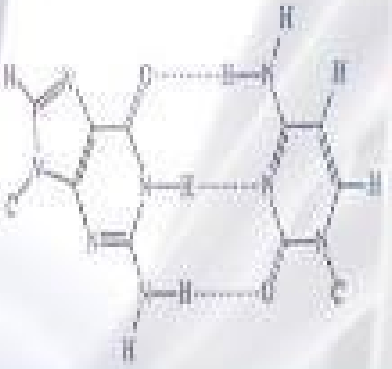
Medical Committee
The University of Jordan

SLIDE ○ SHEET

SLIDE : 26

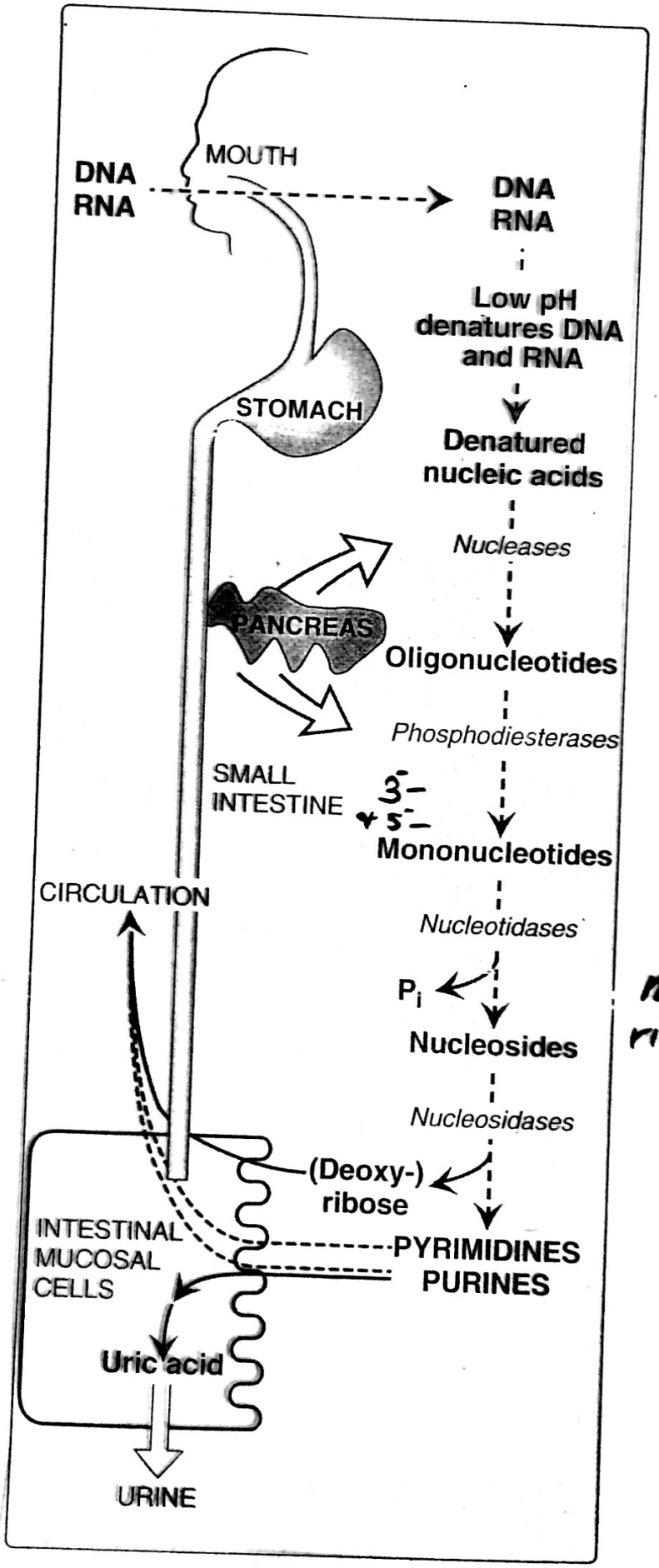
DR.NAME: Dr. Nayef

Biochemistry



Majida Al-Foqaraa'

# Digestion of Dietary Nucleic Acids




nucleic acids rich-food :-
- organ meats
anchovies
sardines
dried beans

# Degradation of the Purine Bases:



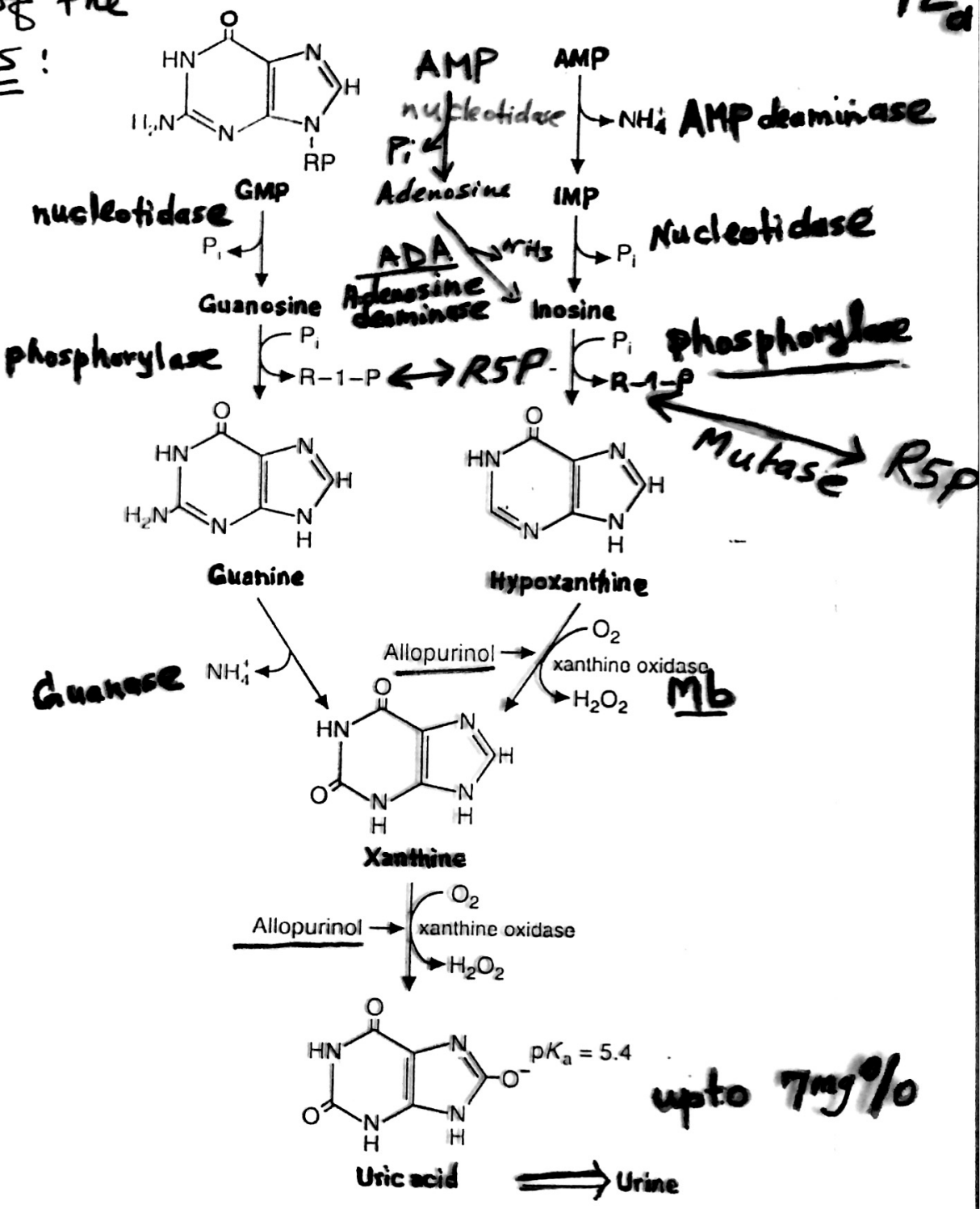



Fig. 41.15. Degradation of the purine bases. The reactions inhibited by allopurinol are cated. A second form of xanthine oxidase exists that uses NAD+ instead of $O_2$ as the electron acceptor.

ADA deficiency → 15% of SCIDS

→ ↑adenosine → ↑dATP + ↑ATP

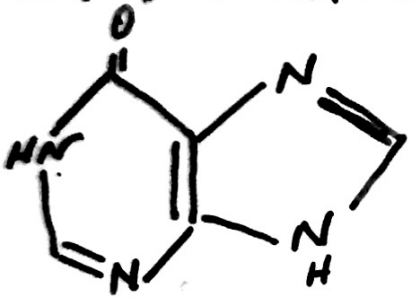
↑dATP → inhibition of ribonucleotide reductase

→ ↓DNA synthesis

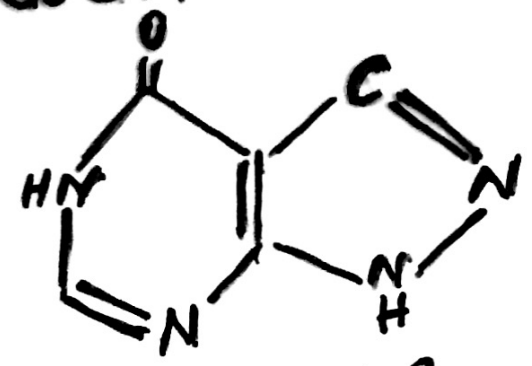
→ Severe Combined Immunodeficiency

→ ↓ T & B cells

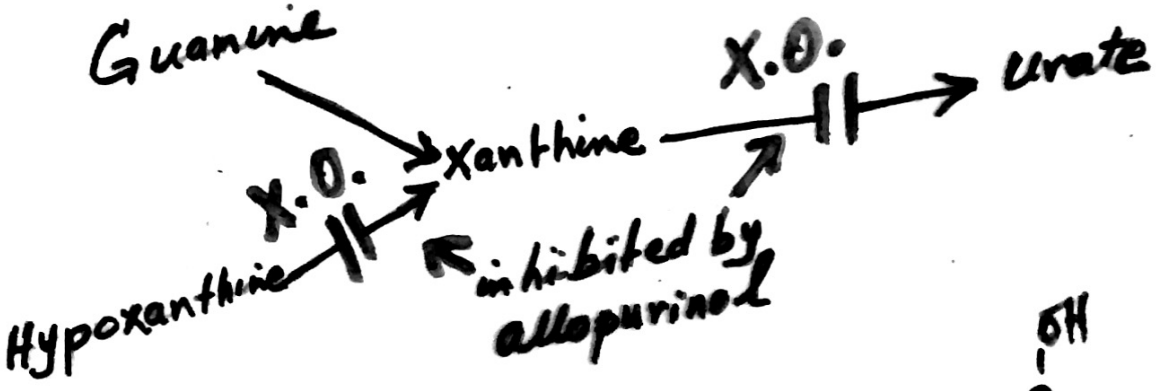
# Allopurinol ✱ Treatment ✱ GOUT:-

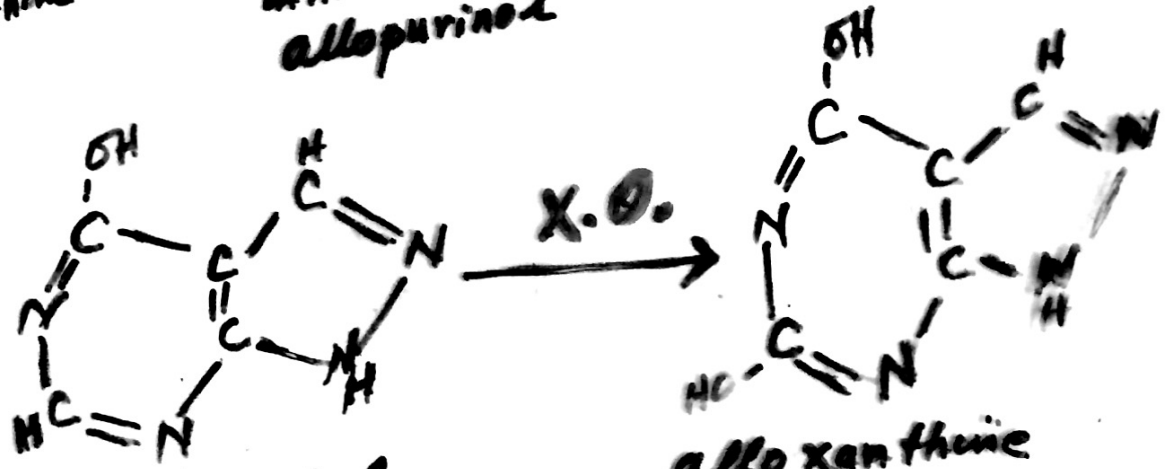


Hypoxanthein



Allopurinol



alloparinol

alloxanthine

suicide inhibition
binds tightly to enzyme

PRPP

Allopurinol → allopurinol ribonucleotide

Net result:- decreased urate synthesis

decreased purine synthesis:-

1- sequesters PRPP

2- amido transferase is inhibited by allopurinol ribonucleotide

# Diseases Associated with Purine Degradation:-

## - GOUT

over-production of uric acid - less common
Underexcretion of uric acid - more common

### Over-Production

- Primary gout
  - Increased activity of PRPP synthetase
    - Increased Vmax
    - decreased Km for R5P
    - decreased sensivity to inhibition by purine nucleotides
  - Decreased salvage pathway
    - Decreased HGPRT activity (Lesch-Nyhan Syndrome)

- Secondary Hyperuricemia
  Caused by Variety of disorders & lifestyles
  - chronic renal insufficiency
  - treatment with chemotherapy
  - excessive consumption of alcohols and purine-rich foods
  - Von-Gierk's disease

- Treatment: treatment with allopurinol

Underexcretion of Uric acid:-

- Causing of over 90% of cases with hyperuricemia
  - Primary cause is unidentified inherited excretory defect
  - Secondary cause that affect kidney handling of urate e.g.-lactic acidosis increases renal urate reabsorption
    - uses of drugs e.g. thiazide diuretics
    - exposure to lead
    - . . . . etc.