Vitamin K.

German word - Koagulation vitamin.

- naphthoquinone derivatives + long isoprenoid side chain.

active form.

- vitamin K1 - phylloquinone (20 C side chain)
- vitamin K2 - menaquinone (30 C side chain)

- menadione - water soluble synthetic vitamin vitamin

Dietary source.

- green leafy vegetables - Good source.
- Intestinal bacteria.

CAN
meet daily requirement.

RDA | - 50 - 100 ug/day. | {normal diet}.

Absorption.

site → Intestine.

- Bile salts & chylomicrons.

Storage & transport -

site → liver.

Transport → beta lipoproteins
↓
plasma.

Functions

- Blood coagulation.
- Functional activity of osteocalcin.
- structural protein of lung, kidney & spleen.

Role in Coagulation.

post translational modification.

↓

γ carboxylation

↓

glutamic acid residue (binding site of Ca)

↓

C.F:

II, VII, IX & X.

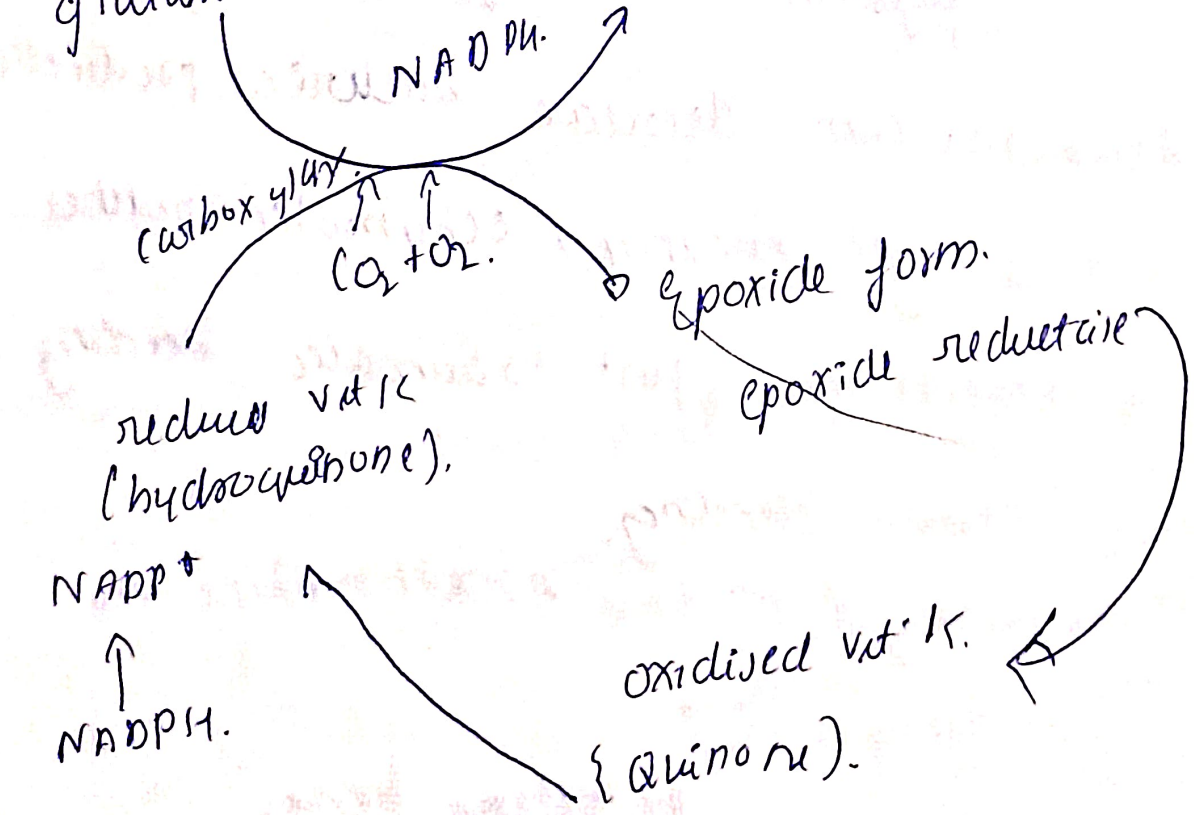
21, 9, 10.

Vitamin K dependent carboxylase.

- microsomal enzyme.
- O_2, NADPH & $(O_2$.
- reduced vit K (Hydroquinone).

Vitamin K cycle.

CC: (@ 7, 9, 10) γ carboxyglutamic acid.



Deficiency manifestations.

- Unusual in adults
- Newborns have sterile intestine.

↓

single Intramuscular dose of vit K.

↓

prophylaxis against hemorrhagic diseases.

- Antibiotics can decrease bacterial production.
  - → Bruising tendency ; ecchymotic patches
  - → Hemorrhage / post-traumatic bleeding.
  - → Internal bleeding.
  - → prolonged PT time. ↳ prothrombin time
  - → delayed CT ↳ clotting time.

Causes of deficiency.

- dietary deficiency rare.
- malabsorption of lipids.

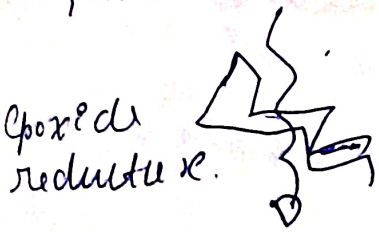
→ obstructive jaundice.
→ chronic pancreatitis, sprue.
→ prolonged antibiotics.
→ gastro intestinal injections (diarrhoea)

Warfarin & Dicoumarol.

(Structurally similar to vit K)

{Anti vitamins} # Anti vitamins of.

Vitamin K



Warfarin & Dicumarol.

γ gamma carboxylation.

Anticoagulation (therapeutic purposes)

- warfarin → synthetic analogue of vit K
- dicoumarol → natural anticoagulant in spoiled sweet clover.

Hyperbilirubinosis IC

- Hemolysis.
- Hyperbilirubinemia.
- Kernicterus ↓ brain damage.