

Vitamins

Dr. Hadi Ansarihadipour



این سایت برای آموزش بیوشیمی بالینی و تبادل آرا بین علاقمندان این علم طراحی شده است. نام سایت شامل دو کلمه است. دز مخفف دزفول بعنوان یکی از قدیمی ترین مراکز علم و تمدن در ایران و آز که مخفف آزمایشگاه است و اشاره به نقش تحقیقات در توسعه علم بیوشیمی دارد.



مدیر سایت

دکتر هادی انصاری هادی پور

فایل های درس بیوشیمی

نویسنده: ادمین سایت · 14 آگوست 19

دانشجویان محترم

فرا رسیدن سال تحصیلی جدید را تبریک می گویم.

فایل های درس بیوشیمی به شرح ذیل است:

دریافت Research Design

دریافت DNA,RNA

دریافت Proteins

دریافت Carbohydrates

دریافت Lipids

دریافت عضله اسکلتی و قلب

دریافت آزمایشگاه بیوشیمی

LIX. THE NOMENCLATURE OF THE SO-CALLED ACCESSORY FOOD FACTORS (VITAMINS).

By JACK CECIL DRUMMOND.

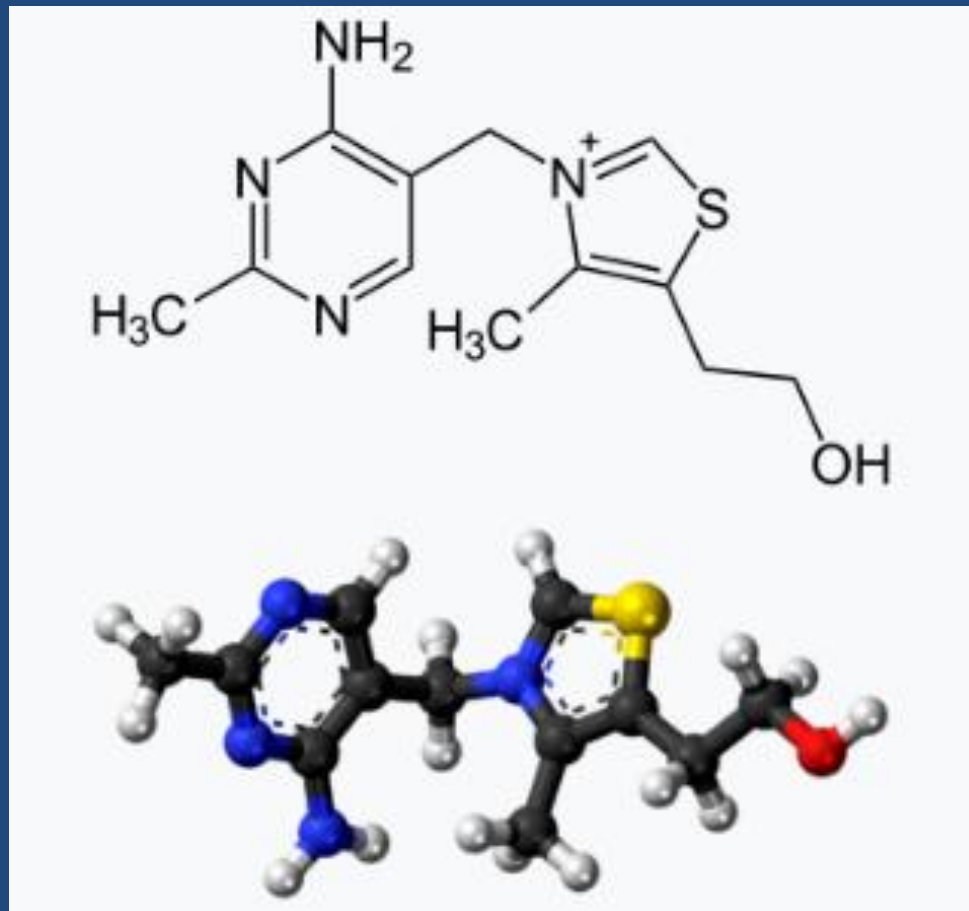
From the Institute of Physiology, University College, London.

(Received August 12th, 1920.)

IN 1912 Hopkins published his classical paper in which he described the important influence of certain dietary constituents on the processes of growth and nutrition. These substances he termed the "accessory factors of the diet." At about the same time Funk, who was working on the subject of experimental beriberi, coined the name "Vitamine" for the same class of substances. Since then the literature has been a good deal confused by the great variety of names which have been utilised to denote these or similar dietary constituents (auximones, Bottomley; nutramines, Abderhalden, etc.). The criticism usually raised against Funk's word Vitamine is that the termination "-ine" is one strictly employed in chemical nomenclature to denote substances of a basic character, whereas there is no evidence which supports his original idea that these indispensable dietary constituents are amines. The word has, however, been widely adopted, and therefore until we know more about the actual nature of the substances themselves, it would be difficult and perhaps unwise to eliminate it altogether. The suggestion is now advanced that the final "-e" be dropped, so that the resulting word **Vitamin** is acceptable under the standard scheme of nomenclature adopted by the Chemical Society, which permits a neutral substance of undefined composition to bear a name ending in "-in." If this suggestion is adopted, it is recommended that the somewhat cumbrous nomenclature introduced by McCollum (Fat-soluble A, Water-soluble B), be dropped, and that the substances be spoken of as **Vitamin A, B, C, etc.** This simplified scheme should be quite sufficient until such time as the factors are isolated, and their true nature identified.

The suggestion is now advanced that the final “-e” be dropped, so that the resulting word **Vitamin** is acceptable under the standard scheme of nomenclature adopted by the Chemical Society, which permits a neutral substance of undefined composition to bear a name ending in “-in.” If this suggestion is adopted, it is recommended that the somewhat cumbersome nomenclature introduced by McCollum (Fat-soluble A, Water-soluble B), be dropped, and that the substances be spoken of as **Vitamin A, B, C, etc.**

B1: Thiamin,



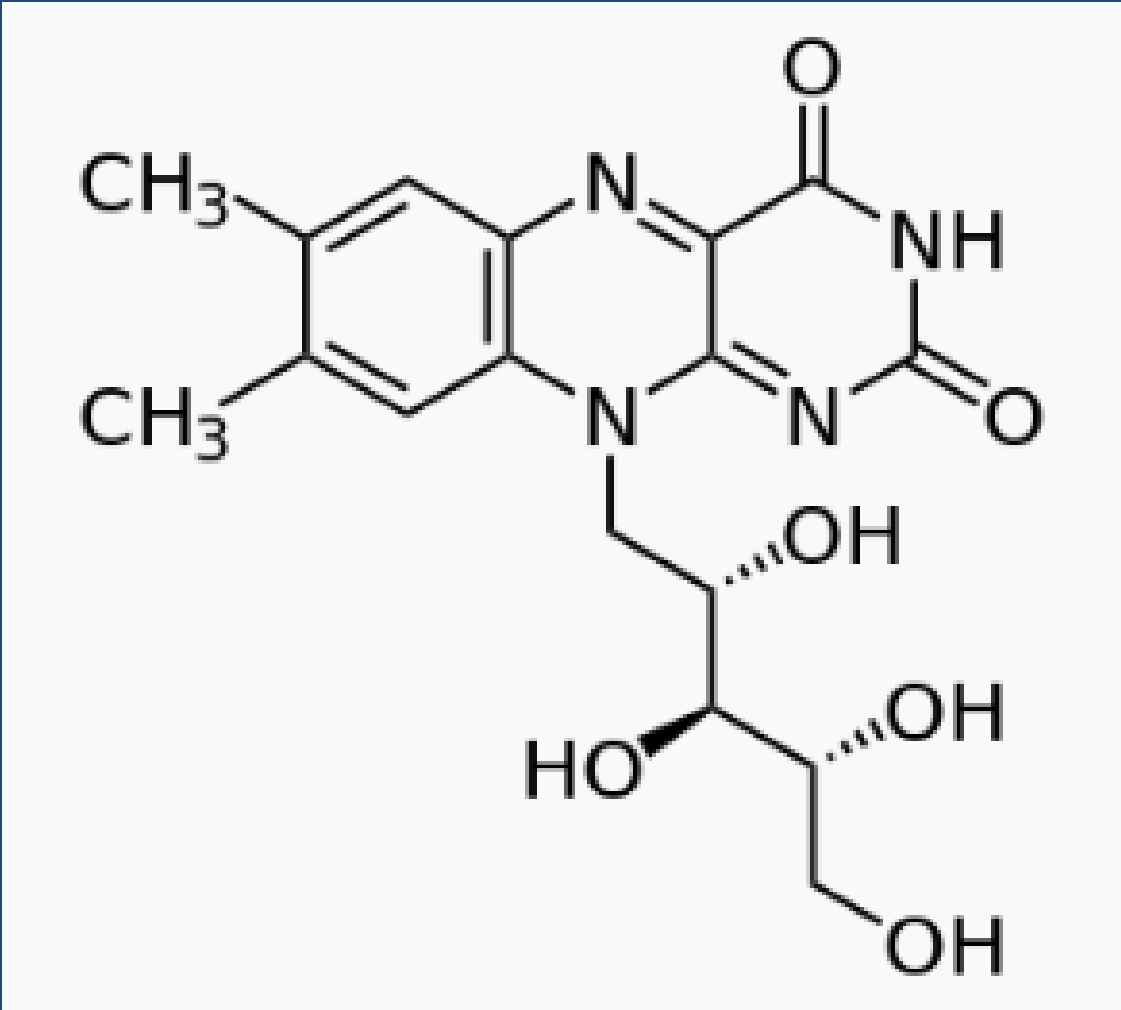
TPP: thiamine pyrophosphate

Decarboxylases

Beriberi



B2, Riboflavin



Green fluorescence at 473 nm



Coenzymes

FAD: Flavine Adenine Dinucleotide

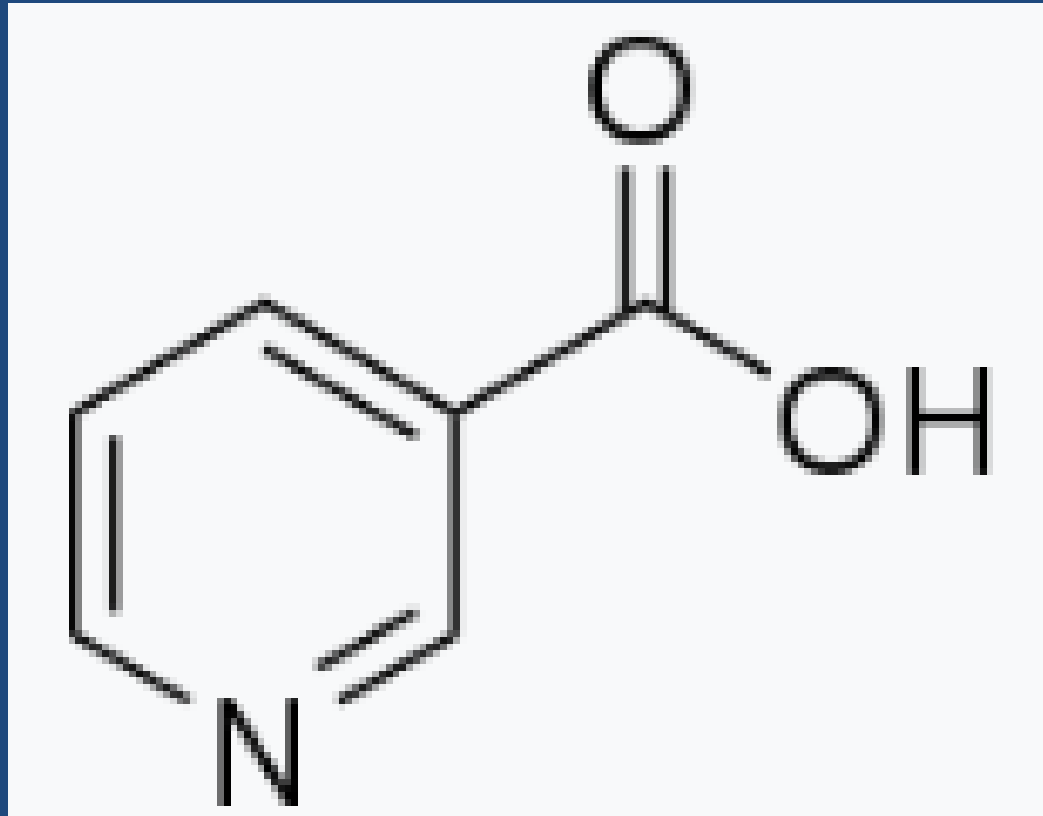
FMN: Flavine Mono Nucleotide

Dehydrogenases

Angular Cheilitis



B3, Niacin



Coenzymes

NAD, NADH₂

Niacin Amide Adenine Dinucleotide

NADP, NADPH₂

Niacin Amide Adenine Dinucleotide Phosphate

Dehydrogenases

Dermatitis



Pellagra



4D

Diarrhea

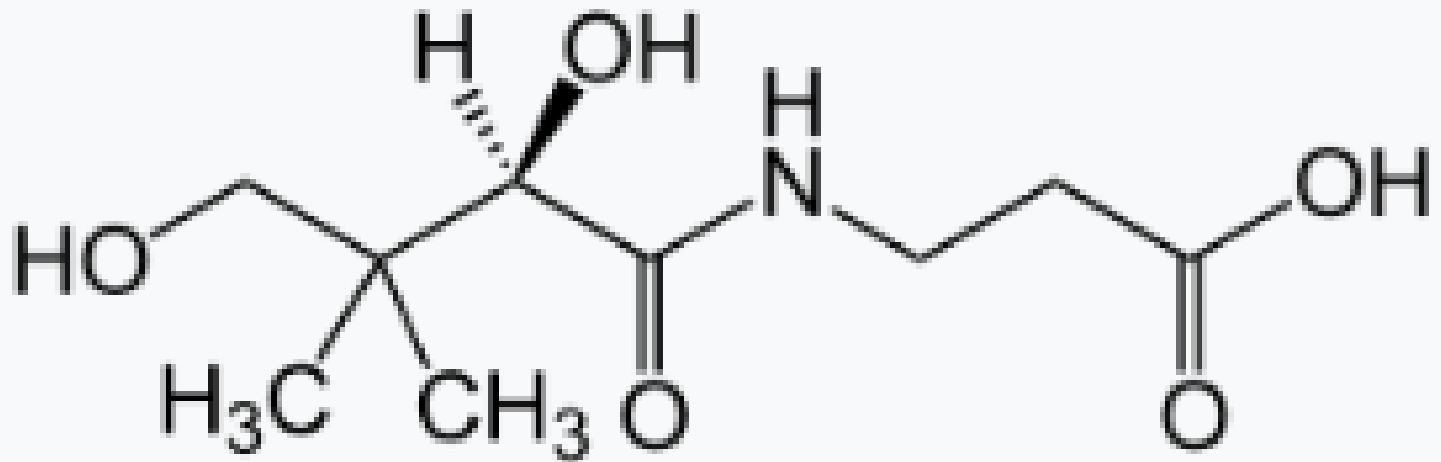
Dermatitis

Dementia

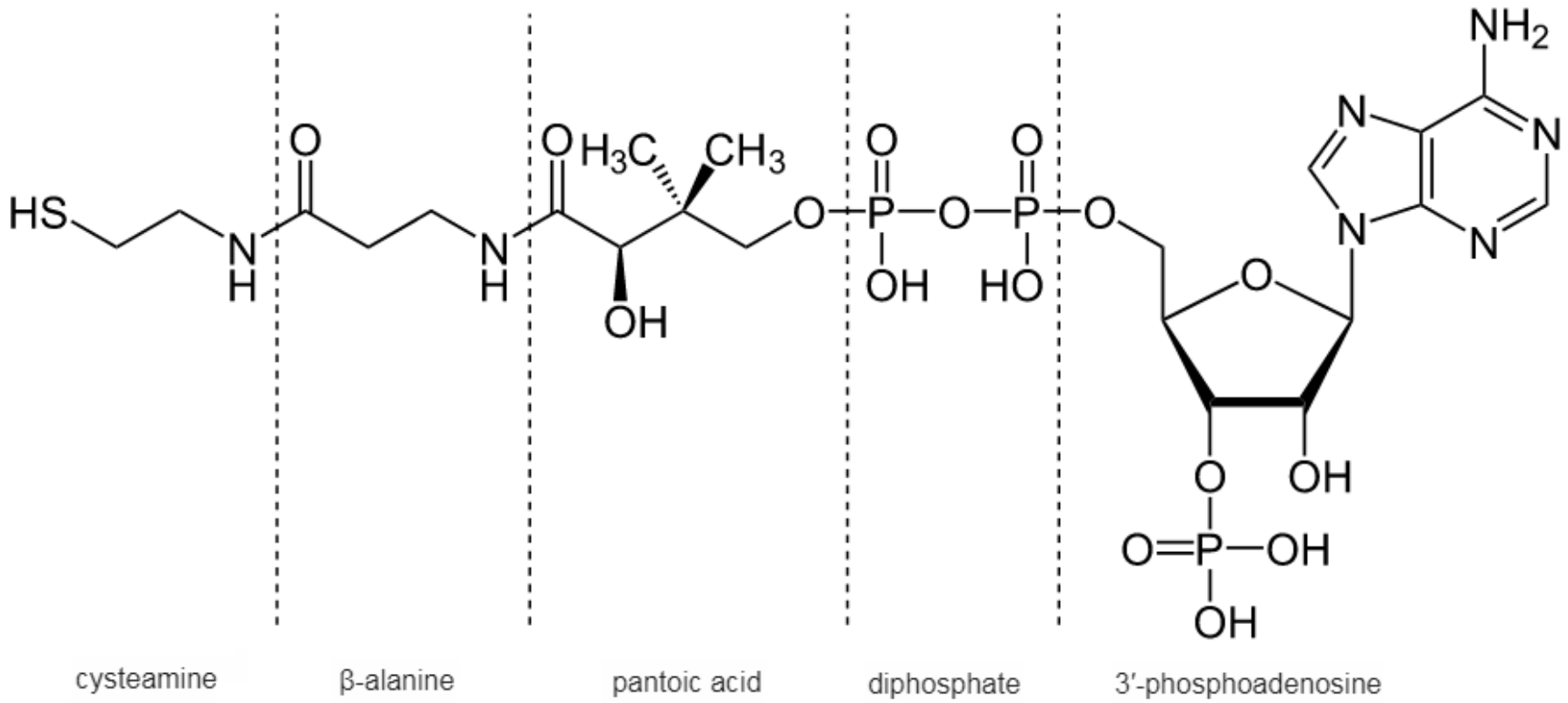
Death

B5

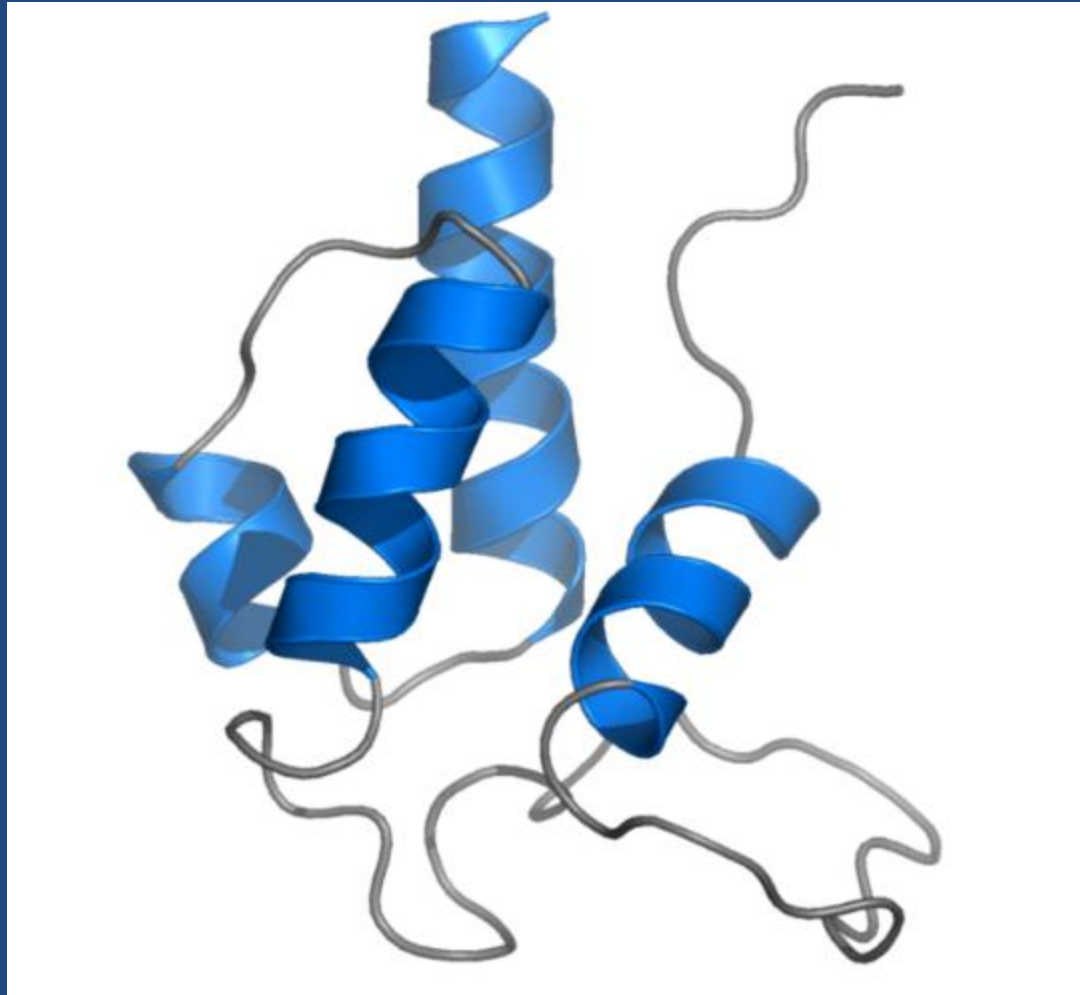
Pantothenic acid



HS CoA



Acyl Carrier Protein



Formyltetrahydrofolate dehydrogenase

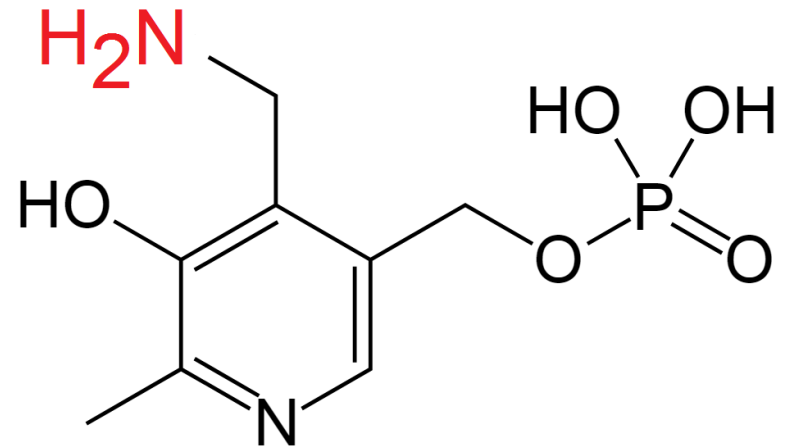
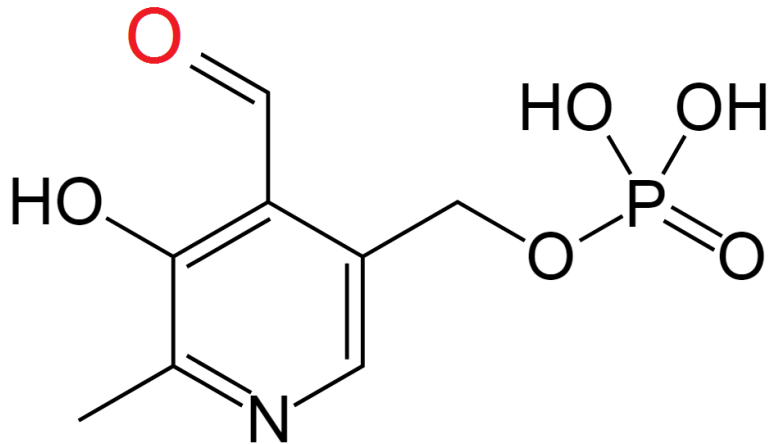
B6

Pyridoxine, Pyridoxal

Coenzymes

Pyridoxal Phosphate

Pyridoxamine Phosphate



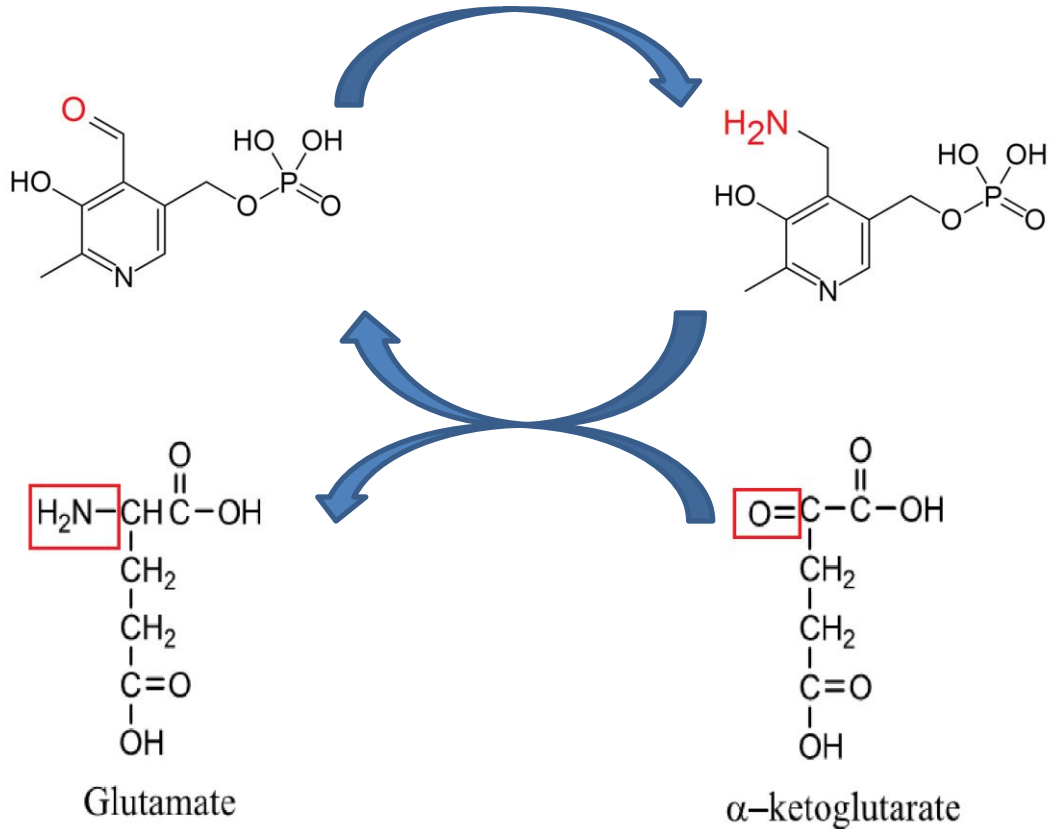
Alanine Transaminase

Glutamate-Pyruvate Transaminase (GPT)

Serum Glutamate-Pyruvate Transaminase (SGPT)



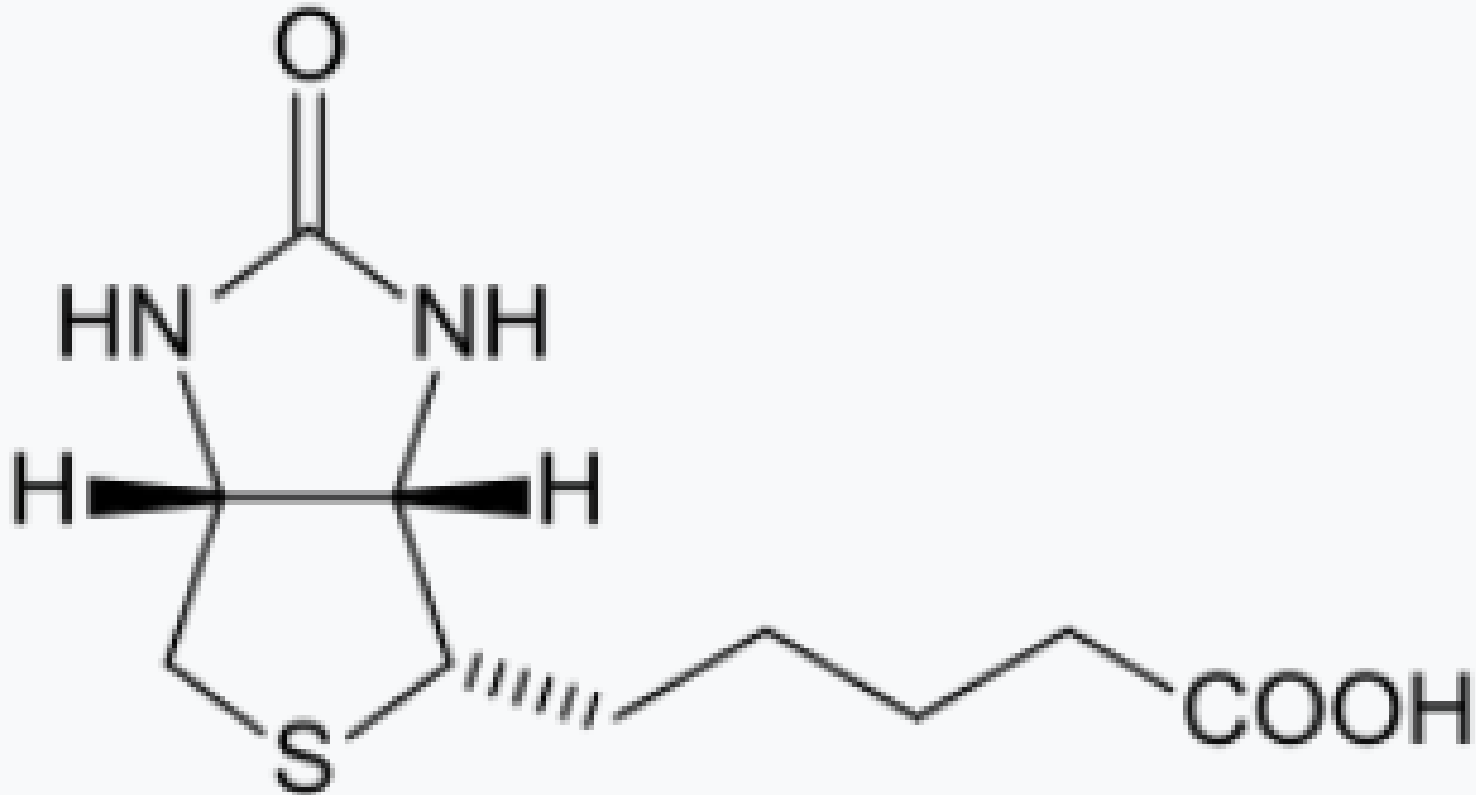
Alanine Transaminase



Seborrhoeic dermatitis



B7: Biotin



Carboxylases

Gluconeogenesis

Fatty acid synthesis

Rash



Anemia

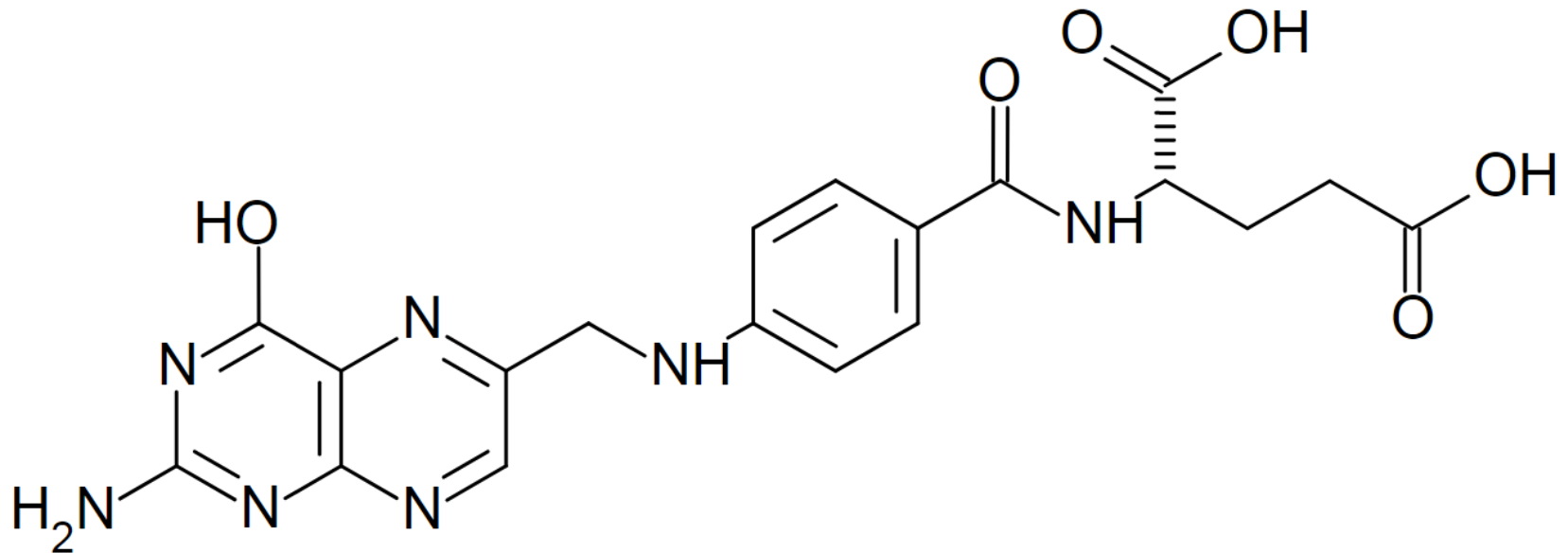
Hair loss

Dermatitis

Fungal infections

B9

Folic Acid, Folate



Microcytic anemia

Poikilocytosis – abnormal variation in shape



acanthocyte



target cell



ovalocyte



stomatocyte



sickle cell

Anisocytosis – abnormal variation in size



schistocyte
2-3 μ



microcyte
5-6 μ



normocyte
7-8 μ

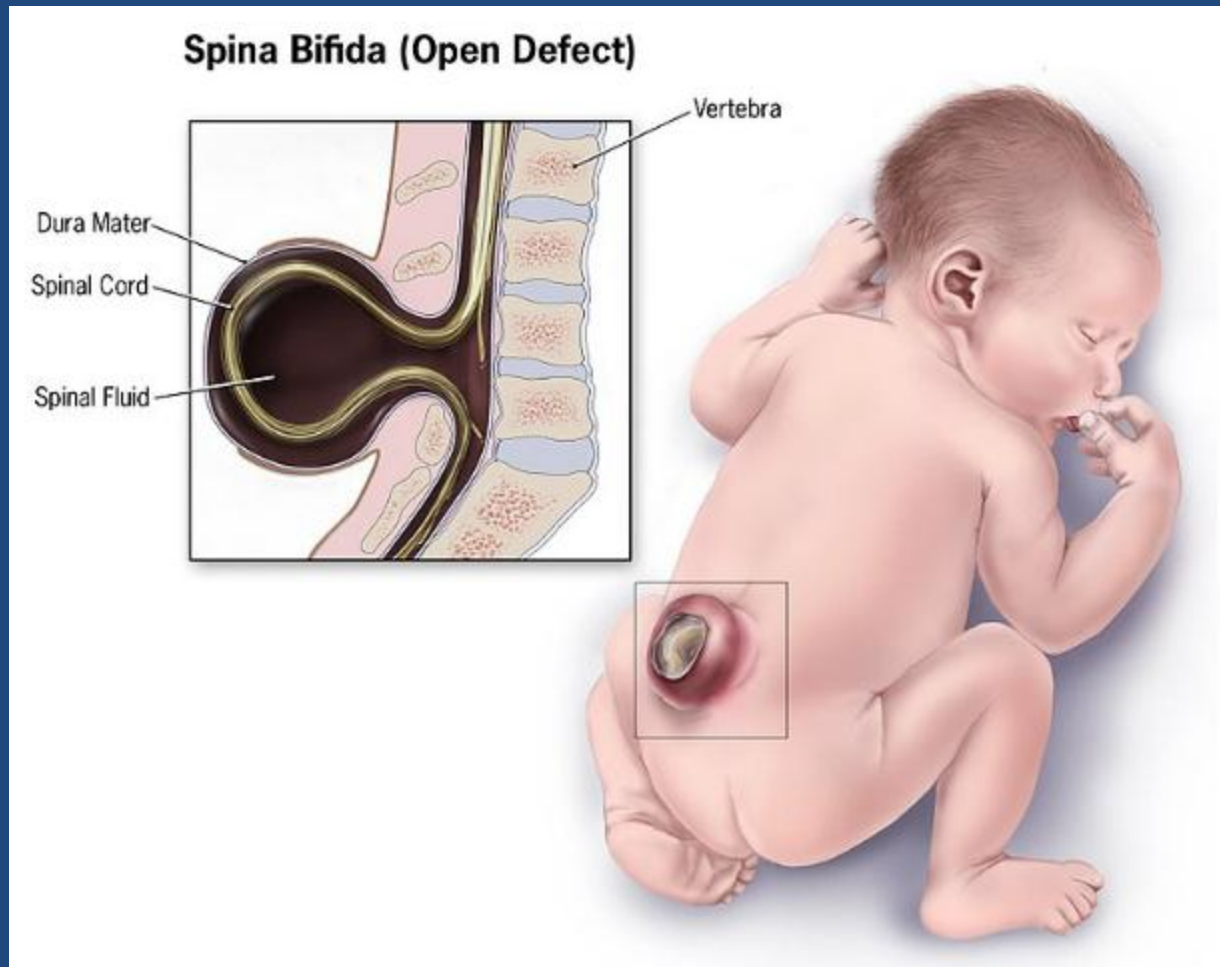


macrocyte
8-12 μ



megalocyte
>12 μ

Neural tube defects



Iniencephaly



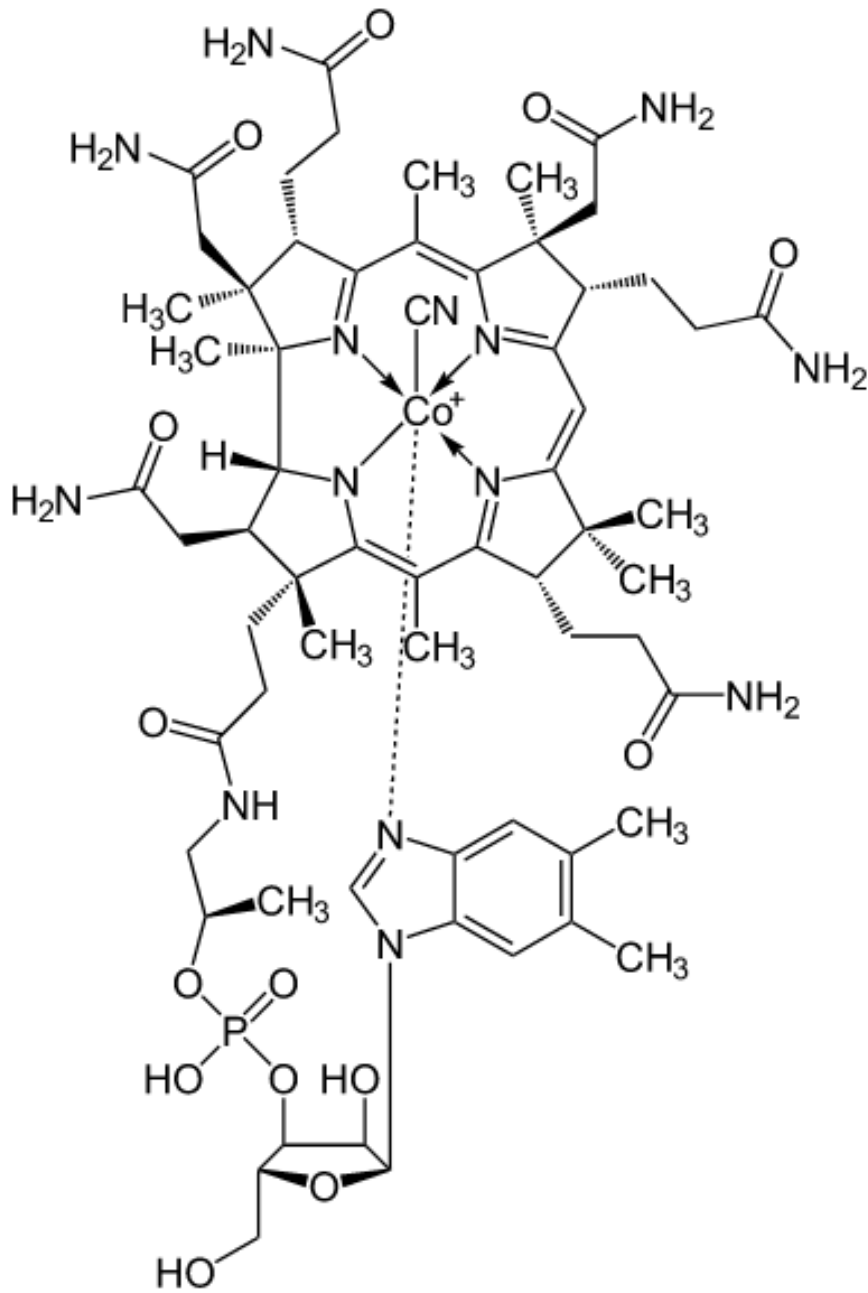
Case Reports in Medicine
Volume 2015, Article ID 520715, 3 pages
<http://dx.doi.org/10.1155/2015/520715>

Case Report

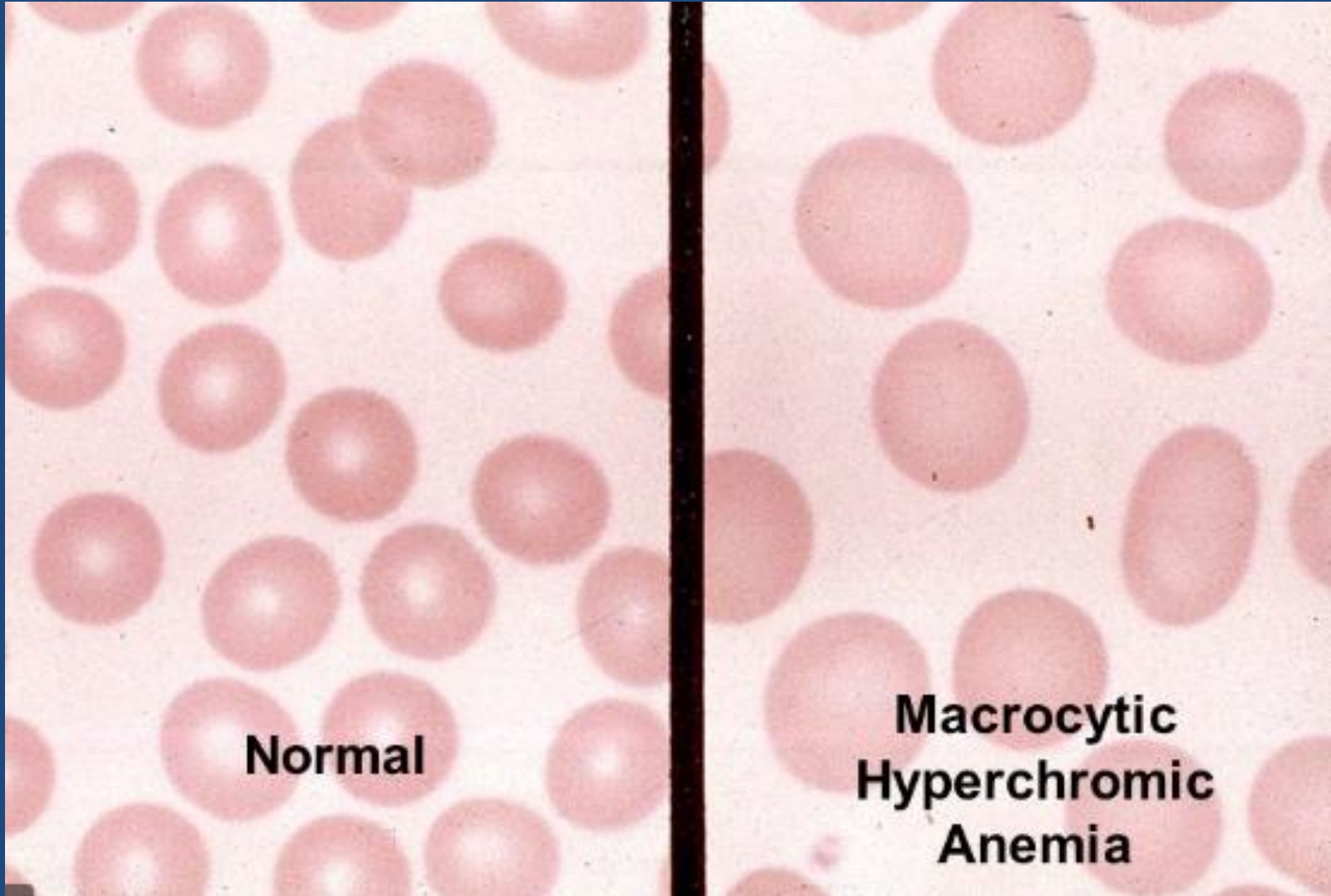
A Fetus with Iniencephaly Delivered at the Third Trimester

Esra Cinar Tanriverdi,¹ Ilhan Bahri Delibas,² Zeynep Kamalak,³ Berrin Goktug Kadioglu,¹ and Rukiye Ada Bender¹

B12 Cyanocobalamin



Macrocytic anemia



Case Rep Med. 2010; 2010: 691563.

PMCID: PMC3065218

Published online 2011 Feb 27. doi: [10.1155/2010/691563](https://doi.org/10.1155/2010/691563)

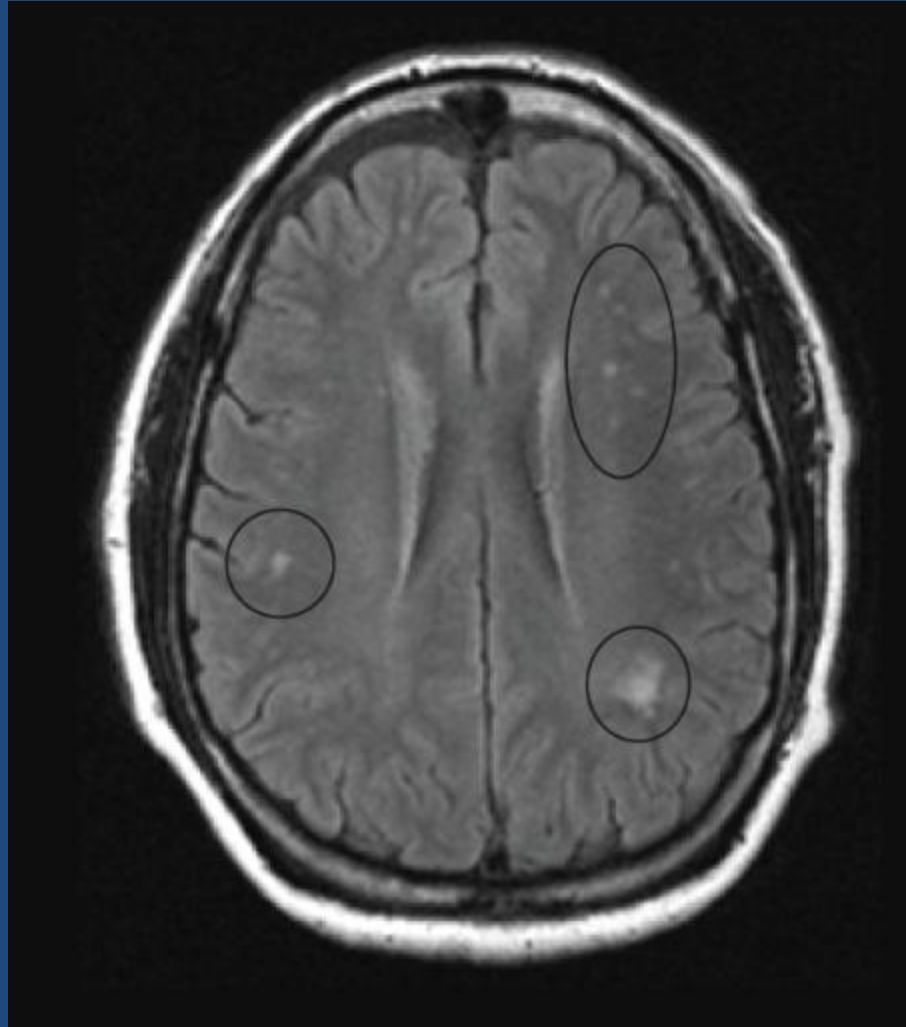
PMID: [21461374](https://pubmed.ncbi.nlm.nih.gov/21461374/)

Vitamin B12 Deficiency due to Chlorofluorocarbon: A Case Report

Hemlata Bhaskar^{1,*} and Rekha Chaudhary²

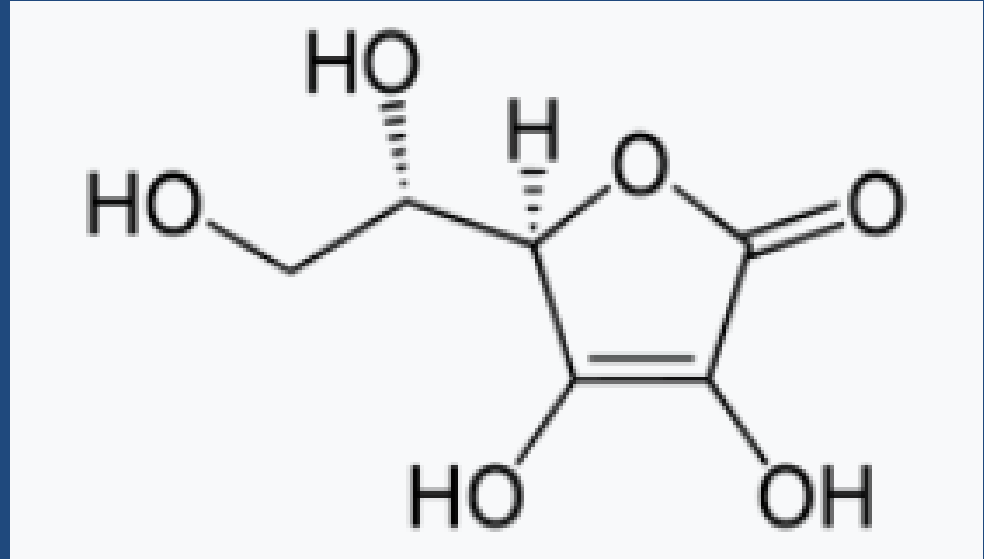
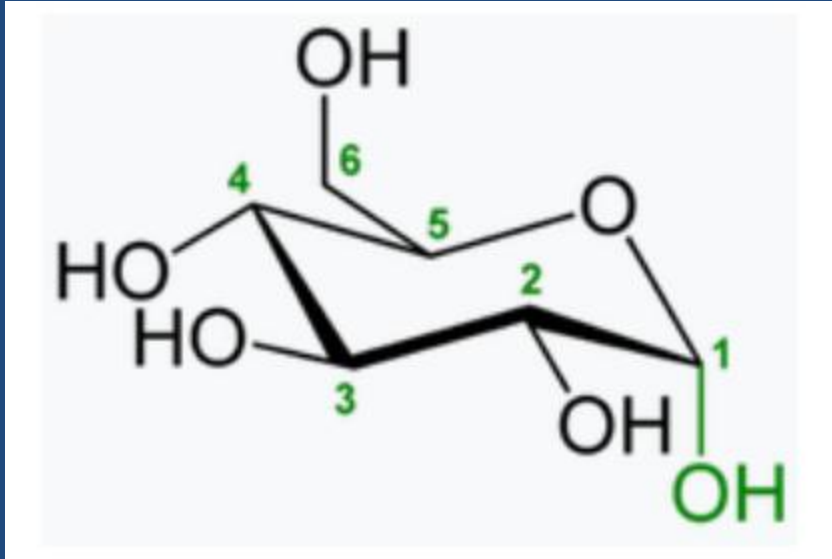
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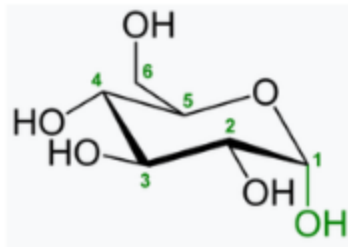
Abnormal lesions (circled) in the periventricular area suggesting white matter pathology.



C

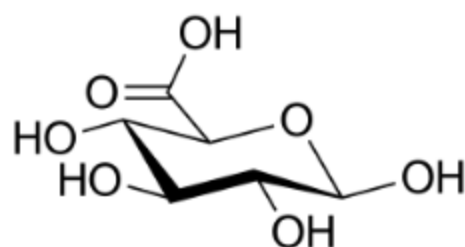
Ascorbic acid, Ascorbate





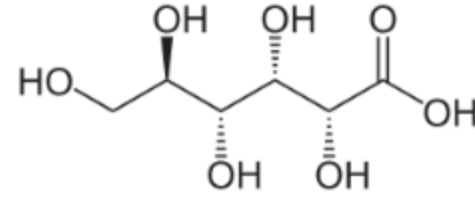
D-Glucose

→
*several
steps*



D-Glucuronate

→



L-Gluconate

↓

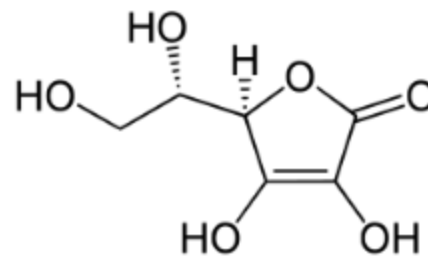
L-Gulonolactone

*oxidation by enzyme
L-gulonolactone oxidase*

↓

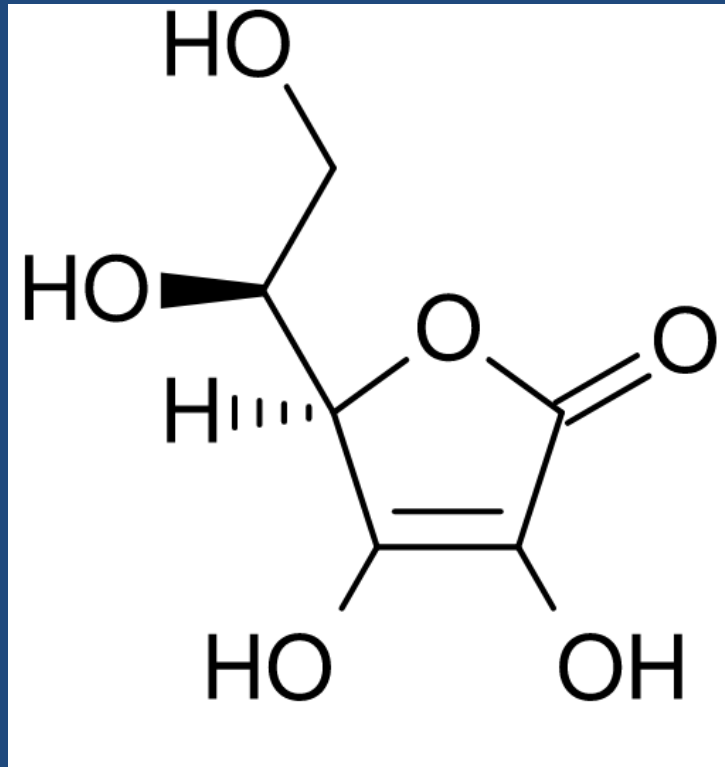
2-Keto-Gulonolactone

↙
*spontaneous
conversion*

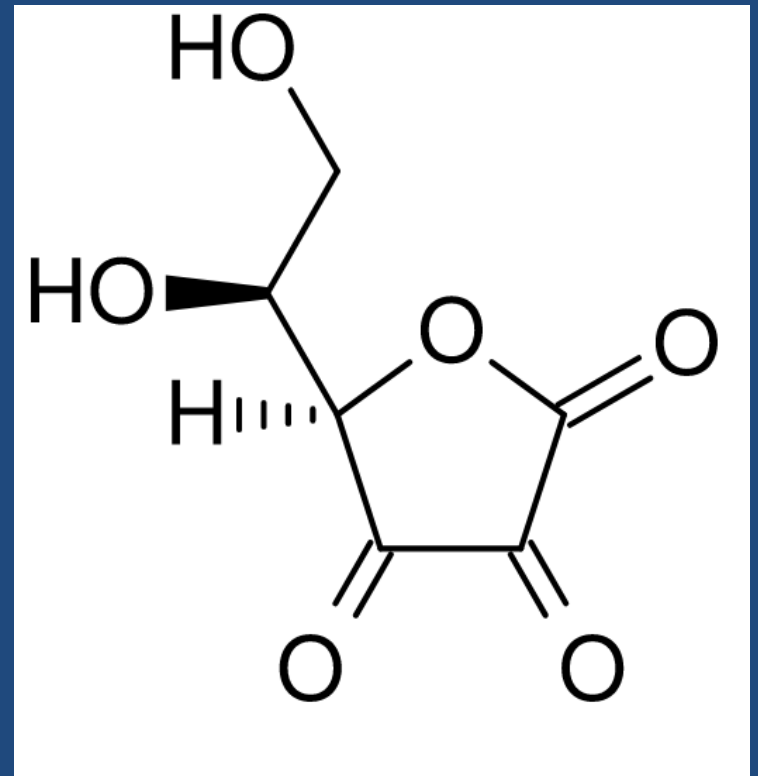


Ascorbic Acid

Reduced



Oxidized




Hydroxylases
Iron absorption
Antioxidant



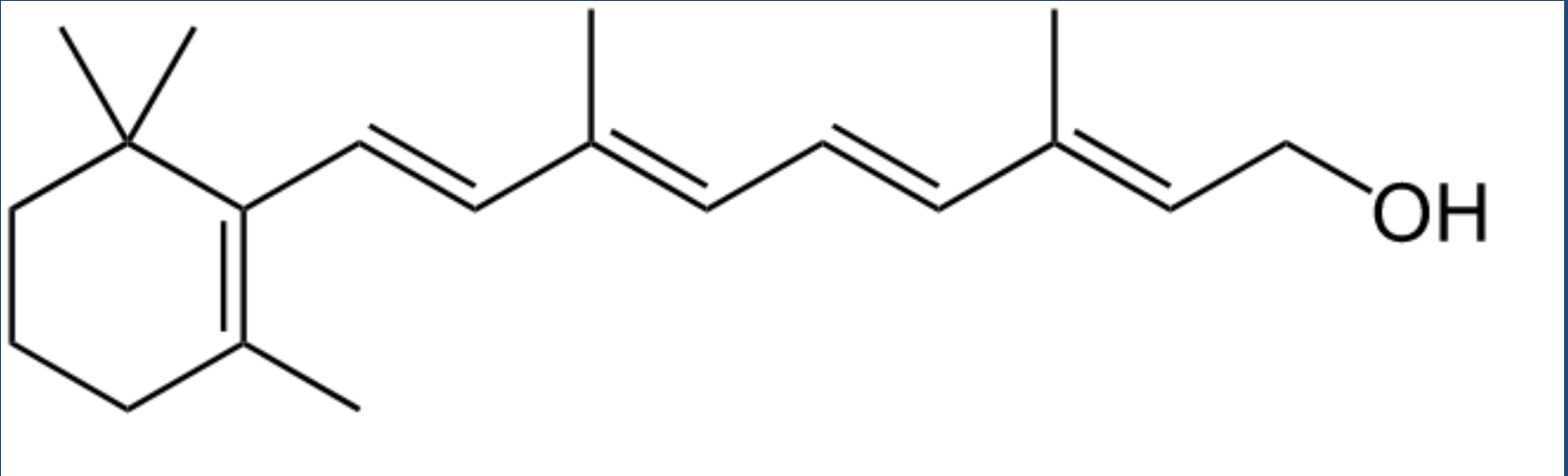
Original Article

Protective effects of omega-3, atorvastatin, vitamin E and vitamin C against doxorubicin-induced cardiotoxicity in rats: a comparison study

Abbas Alimoradian^{1*} , Hadi Ansarihadipour², Saeed Changizi-Ashtiyani³, Ali Chehrei⁴, Reza Talebi⁵, Sadaf Davudian⁶, Soheila Rostami⁷

A

Retinol, Retinal, Retinoic acid



A

Retinol, Retinal, Retinoic acid

Rhodopsin

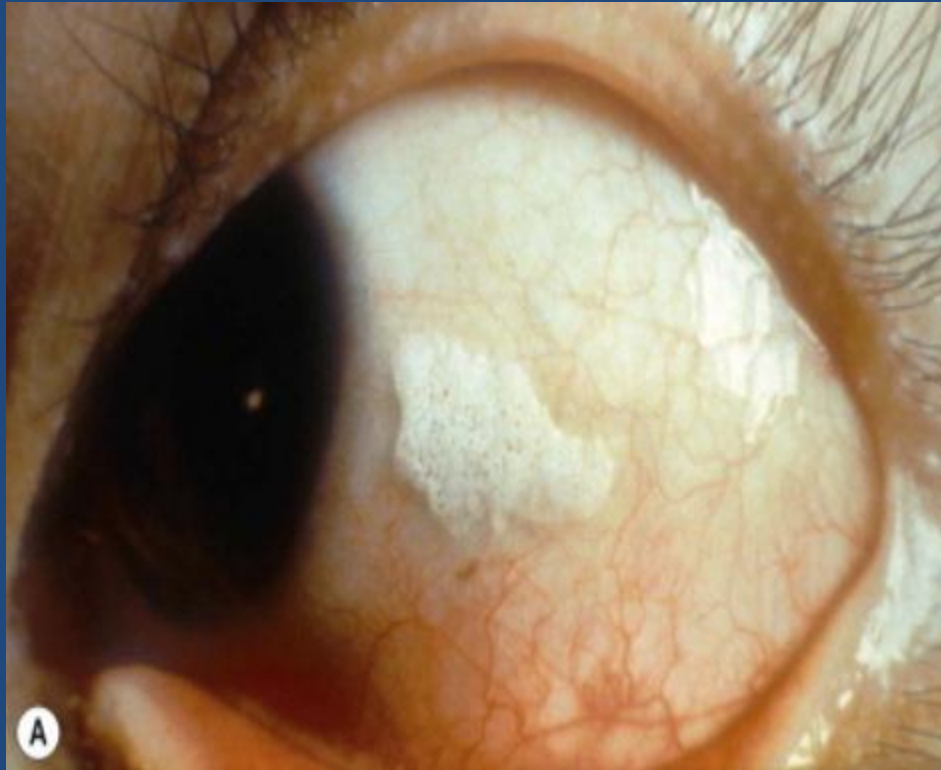
Gene expression

Antioxidant

Nictalopia



Vitamin A deficiency: Bitot's spot



Vitamin A deficiency: keratomalacia



Vitamin A deficiency: blindness

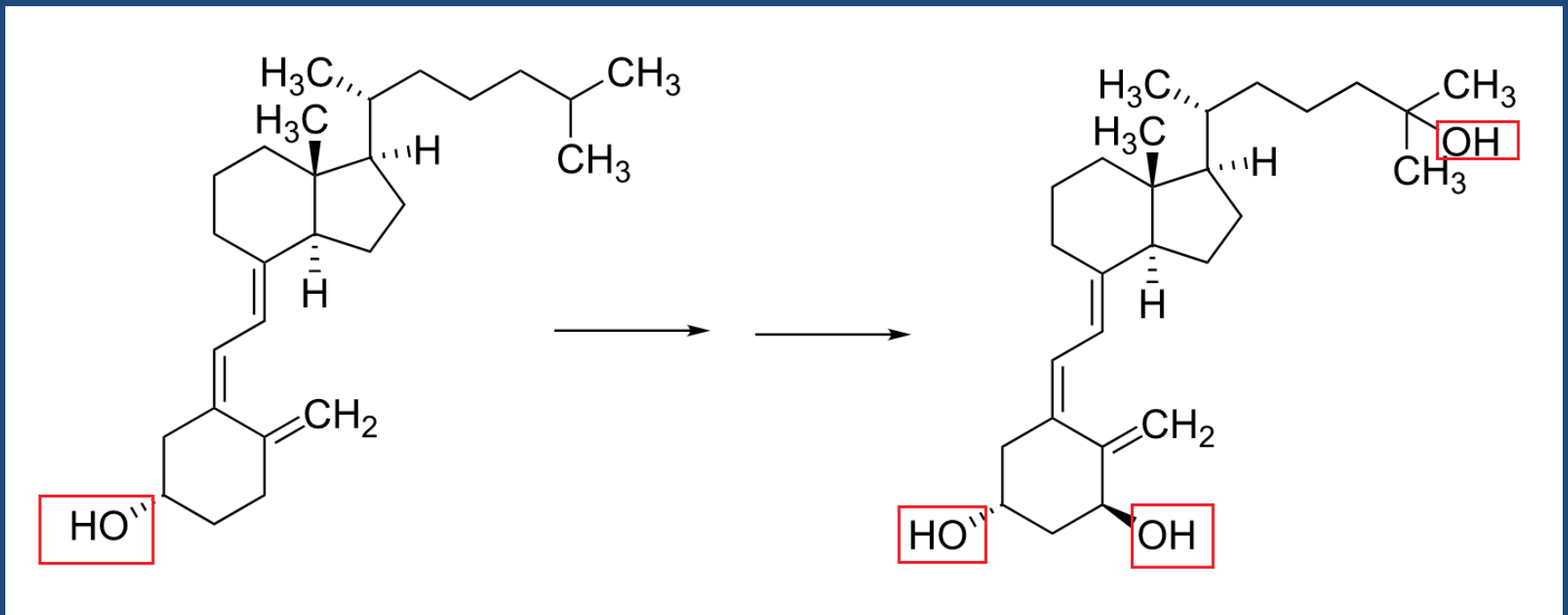


Vit. D

Name	Chemical composition
Vitamin D ₁	Ergocalciferol with Lumisterol
Vitamin D ₂	Ergocalciferol
Vitamin D ₃	Cholecalciferol
Vitamin D ₄	22-Dihydroergocalciferol
Vitamin D ₅	Sitocalciferol

Cholecalciferol

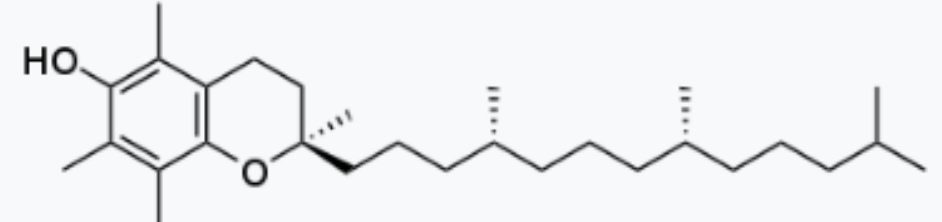
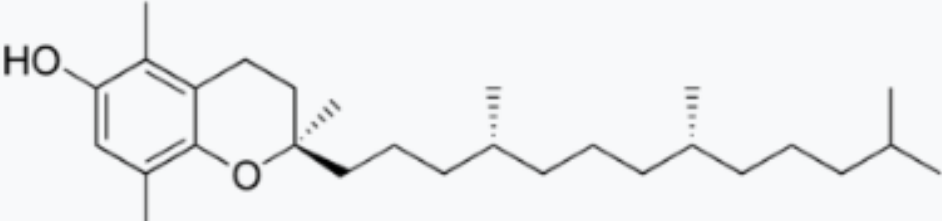
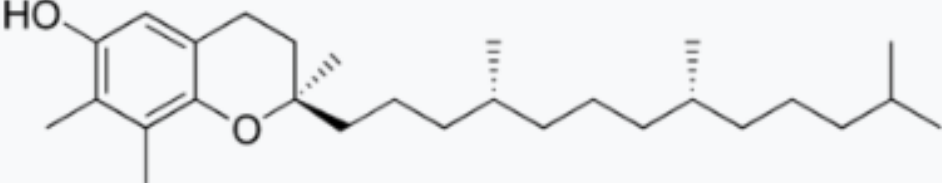
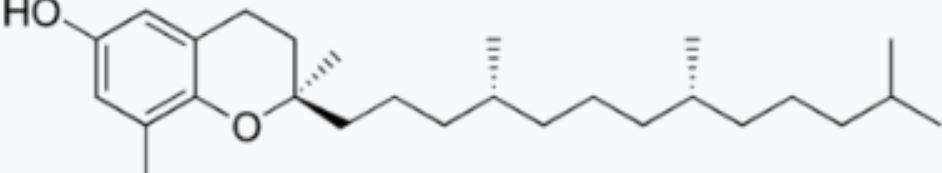
Calcitriol



Rickets



Vit. E

Form	Structure
<i>alpha-Tocopherol</i>	 <p>The structure of alpha-tocopherol features a chromanol ring with methyl groups at positions 2, 4, and 8, and a hydroxyl group at position 6. The side chain at position 3 is a phytyl group, which is a long hydrocarbon chain with methyl branches at the 11th and 14th carbons from the ring.</p>
<i>beta-Tocopherol</i>	 <p>The structure of beta-tocopherol is similar to alpha-tocopherol, but the hydroxyl group is located at position 5 on the chromanol ring.</p>
<i>gamma-Tocopherol</i>	 <p>The structure of gamma-tocopherol has a hydroxyl group at position 4 on the chromanol ring.</p>
<i>delta-Tocopherol</i>	 <p>The structure of delta-tocopherol has a hydroxyl group at position 3 on the chromanol ring.</p>

Vit. E

Antioxidant

Signal transduction

Vit. E Deficiency

Hemolytic Anemia

Retinopathy

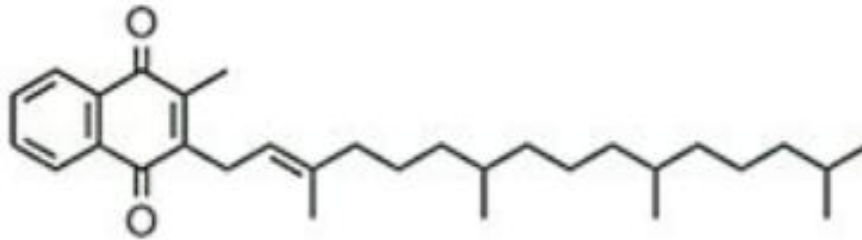
Neural defects

Neuromuscular defects

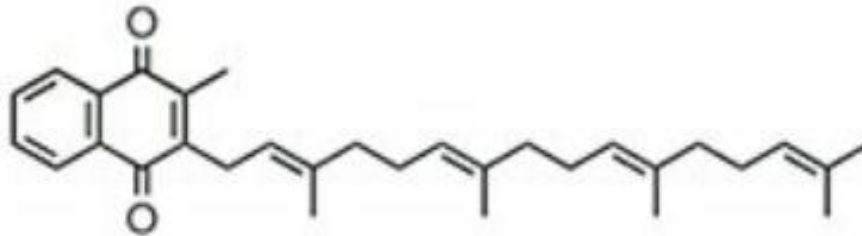
Vit. K

Phylloquinone, Menaquinone, Menadione

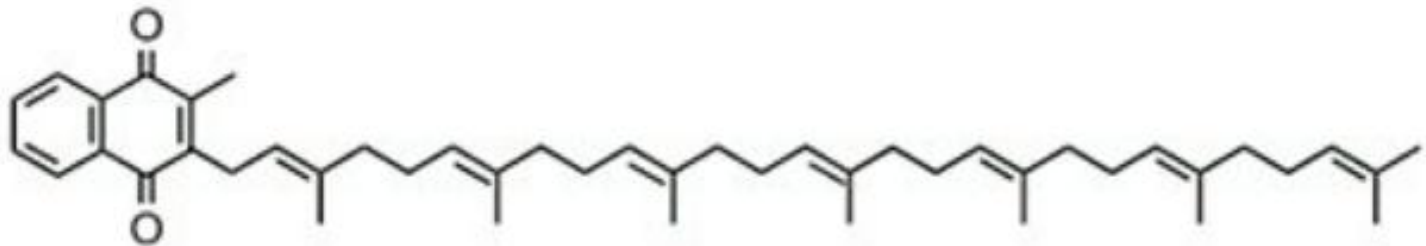
K1



MK-4



MK-7



Vit. K

Carboxylases:

Liver: Coagulation factors

Bone: Osteocalcin

Vit. K Deficiency

Hemorrhagia

Hematoma



Petechia



[Molecular and Cellular Biochemistry](#)

December 2004, Volume 267, [Issue 1-2](#), pp 195–201 | [Cite as](#)

Influence of plasma total antioxidant ability on lipid and protein oxidation products in plasma and erythrocyte ghost obtained from developing and adult rats pretreated with two vitamin K formulations

[Authors](#)

[Authors and affiliations](#)

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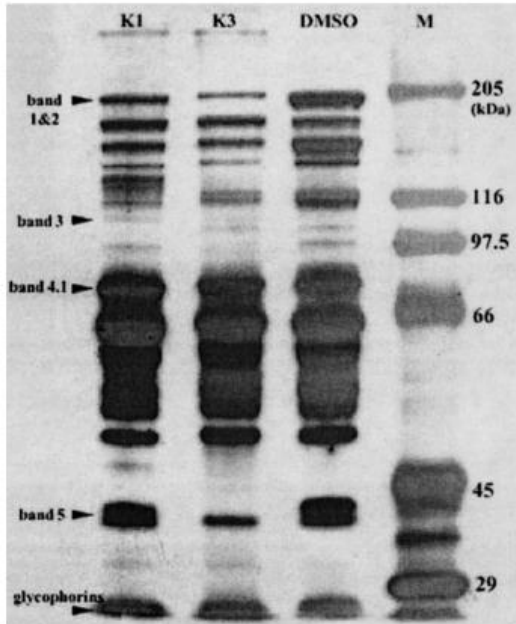


Fig. 3. Comparison of the profile (SDS-PAGE) of membrane proteins obtained from vitamin K1 and menadione treated rats. The protein pattern of erythrocyte membrane obtained from rats pretreated with different compounds as described in methods section. K1 = Vitamin K1 treated, K3 = menadione treated and DMSO = rats pretreated with DMSO which was used to dissolve menadione. M = molecular weight marker. Arrow heads show the bands known as major membrane proteins.

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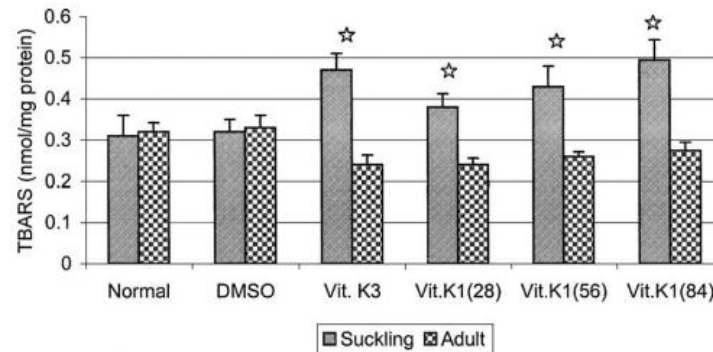



Fig. 1. Thiobarbituric acid reacting substances (TBARS) in erythrocyte ghost obtained from growing and adult rats pretreated with vitamin K1 or menadione. Experimental details are as described in "Materials and Methods" section. Values are Mean \pm S.E.M. obtained of four analyses carried out in duplicate. (*) Statistically significant from the corresponding control group with p values of less than 0.05.



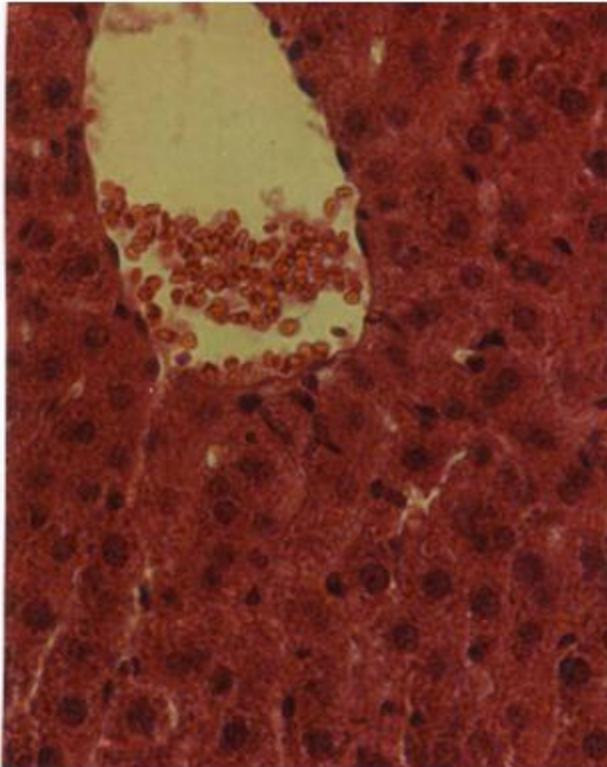
RELATIONSHIP BETWEEN ANTIOXIDANT POWER OF PLASMA WITH LIPID PEROXIDE FORMATION IN PLASMA AND LIVER DAMAGES CAUSED BY OVERDOSE OF VITAMIN K1 IN ADULT AND WEANLING RATS

H. Ansari Hadipour

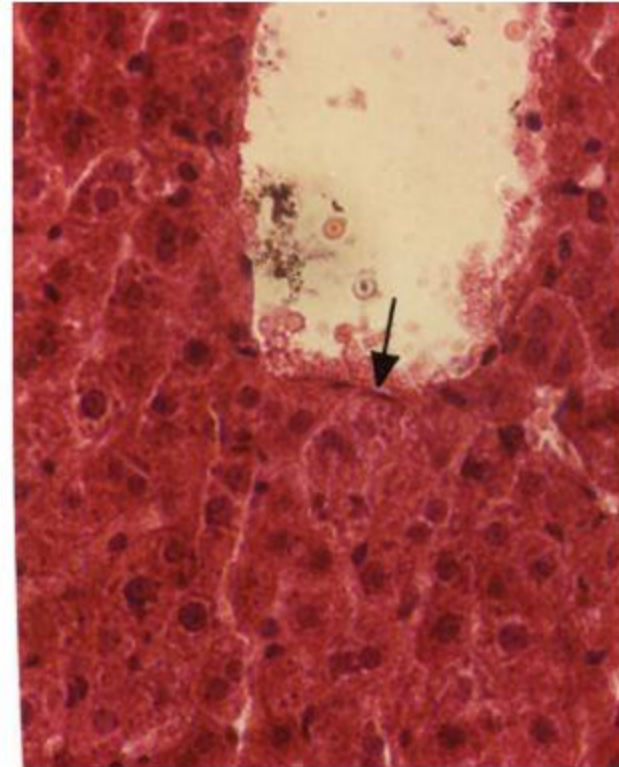
A. Allameh A. Kazemnejad

 [XML](#)

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A



B

Fig. 4. Magnified view of liver sections of adult rats treated with vitamin K₁. **(A)** Control animals injected with DMSO only. The final volume of DMSO was 2.1 ml given for 3 days (700 μ l/day) **(B)** Treated rats given 84 mg/kg b.w of vitamin K₁ dissolved in 2.1 ml of DMSO injected in 3 consecutive days and sacrificed 24 h after the last injection. Single arrow shows a dead hepatocyte