

THE B COMPLEX VITAMINS

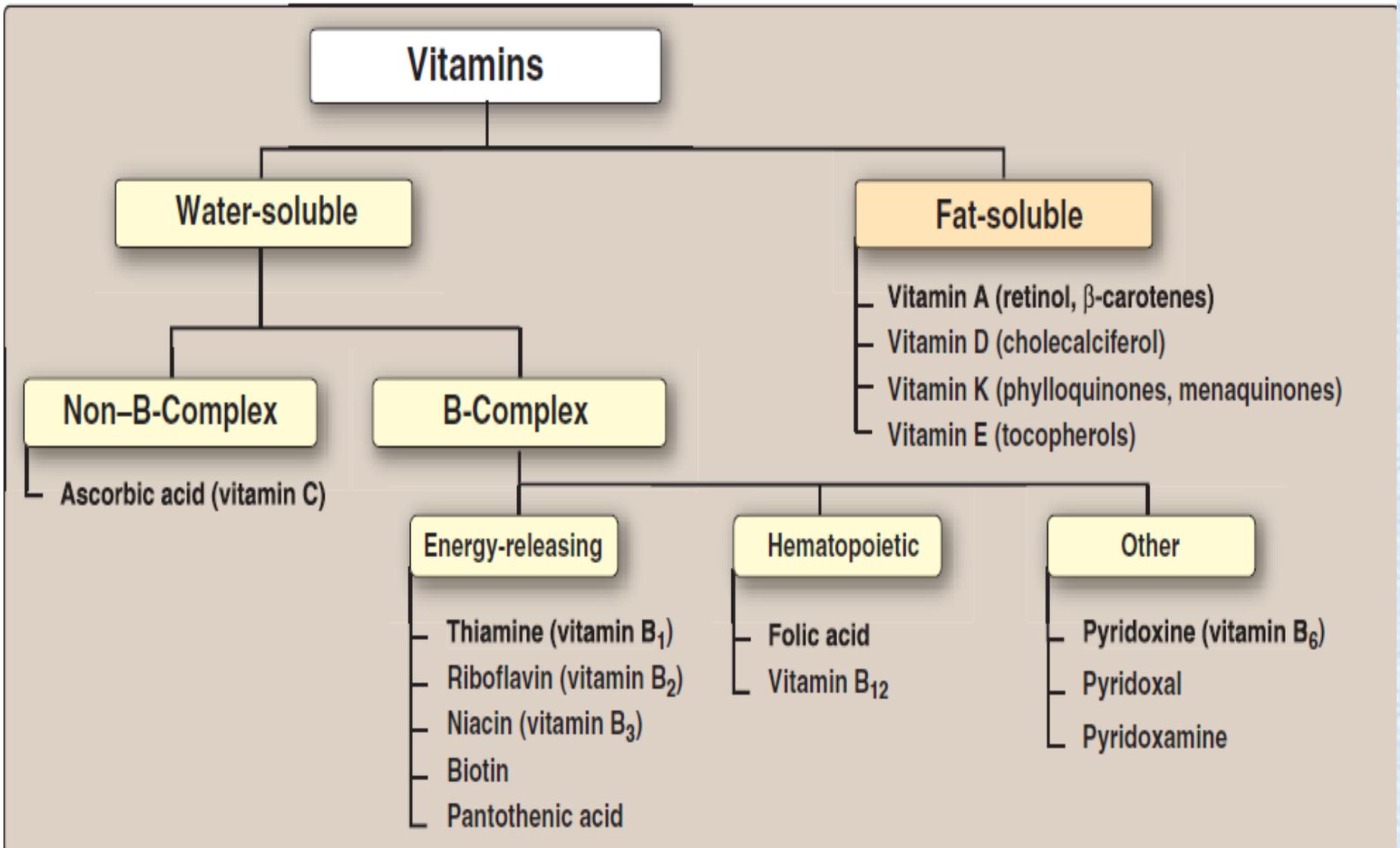
VITAMIN B₂ , NIACIN (VIT. B3) & PANTOTHENIC ACID (VIT. B5)

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THE B COMPLEX VITAMINS

- The vitamin B-complex refers to all of the known essential water-soluble vitamins except for vitamin C.
- These include thiamine (vitamin B1), riboflavin (vitamin B2), niacin (vitamin B3), pantothenic acid (vitamin B5), pyridoxine (vitamin B6), biotin, folic acid and the cobalamins (vitamin B12).

Vitamins Classification Chart



- ❖ **Vitamin B1** • Helps reduce stress, strengthen the nervous system and is the responsible for the production of neurotransmitters that relay message to the muscles and nerves.
- ❖ **Vitamin B2** • Help protect the nervous system and strengthens the immune system
- ❖ **Vitamin B3** • Helps in reducing bad cholesterol and plays a significant role in heart health.
- ❖ **Vitamin B5** • Aids is energy production, the formation of antibodies and support hair, skin and immune health.
- ❖ **Vitamin B6** • Aids the immune system function, the production of red blood cells and the breakdown and digestion of proteins.
- ❖ **Vitamin B7** • Promotes healthy nerve tissue and bone marrow and strengthens connectivity issue.
- ❖ **Vitamin B9** • Aids protein metabolism, the formation of red blood cells, energy

VITAMIN B₂

- **Riboflavin Properties** Yellow crystals Soluble in water
Heat soluble in neutral and acid media Destroy by light.
- **Sources** Milk, liver, kidney, muscle, butter, chicken, fish, yeast, cheese, raw egg, white grains, green vegetable such as spinach, peanuts, fruits such as apple, orange etc

- Functions : Precursor of coenzymes (FMN and FAD) in oxidation- reduction reactions of electron transport chain, fatty acid synthesis etc.
- Essential for growth, essential for tissue oxidation related to carbohydrate, fat and protein metabolism.
- Maintain mucosal, epithelial and ocular tissues. Essential for normal vision.

- Deficiency Diseases
- Symptoms
- Tongue sore at the corner of the mouth. Loss of hair, skin becomes dry and scaly.
- Arrest of growth.
- Dermatitis around nose and lips, inflammation of tongue, angular stomatitis and cheilosis, photophobia, cataract etc. Scrotal or vulval dermatitis, intense itching etc.
- Disturb carbohydrate metabolism.

❖ NIACIN (VIT. B3)

- ❖ Water Soluble • Very Stable • Active as Nicotinamide Adenine Dinucleotide (NAD) And NAD-phosphate (NADP) • A peculiar vitamin since it can be synthesized in body (via tryptophan)
- ❖ Absorption and Metabolism • Absorbed in the upper part of the small intestine • It is stored only sparingly in the kidney, heart, brain, and liver and is excreted in the urine

❖ Function

- ❖ Forms the active portion of the coenzymes that play an essential role in supplying organ tissues, making its presence necessary for the health of cells.
- ❖ Acts as catalyst in accepting and releasing hydrogen in cellular respiration, carbohydrate metabolism and fat synthesis
- ❖ It is needed for normal functioning of nervous system, skin and GIT

Deficiency • Pellagra – characterized as the disease causing 4D's

- Dermatitis • Diarrhea • Depression • Death

Sources

- Found in appreciable amounts in liver, yeast, meat, legumes, peanuts and whole cereals
- Foods that are good sources of tryptophan, such as animal protein and vegetable protein

Symptoms

- Muscle weaknessWeakness
- Persistent fatiguability
- Irritability
- Headache
 - Depression, dementia
 - Soreness and inflammation of the tongue (glossitis- beefy red tongue, painful) and mouth (stomatitis)
 - Dermatitis- involving parts of body that are sun exposed. Casals necklace, pellagra glove and pellagra boot

PANTOTHENIC ACID (VIT. B5)

- Sometimes, erroneously called – Vitamin B5
- So plentiful in grains and vegetables, a deficiency unlikely – except in complete starvation

Function • Involved in the release of energy from the catabolism of carbohydrates, proteins, and fats

- It initiates the Krebs cycle and releases ATP
- It is the starting substance for the biosynthesis of cholesterol and other sterols, a component of hemoglobin

Sources

- Widely distributed, occurring abundantly in yeast and in animal tissue such as liver and eggs, whole-grain cereals and legumes
- Other fair sources are milk, fruits, and vegetables such as broccoli, cauliflower, and potatoes

Deficiency

- Fatigue
- Sleep disturbances
- Headaches
- Malaise
- Nausea
- Acne
- Burning, prickling sensations (paresthesia) of the hands and feet, cramping of the leg muscles and impaired coordination

DAILY REQUIREMENT OF VITAMINS:

- **Vit B2 Infants-** 0.5 mg/1000kcal Children- 0.6-1.2 mg/1000kcal
- **Vit B3 INFANTS:** 5-6Mg/day Children: 6-12mg/day adolescents: 14-16 mg/day.

Vit B5 Infants: 1.7-1.8 mg Children: 2-4mg
Adolescents: 5mg

A photograph showing a bouquet of purple flowers on the left and a white card with the words 'Thank you' written in purple cursive on the right. The card is placed on a light-colored, possibly marble, surface. A black pen is visible at the bottom right corner of the card.

Thank
you