

# THE B COMPLEX VITAMINS

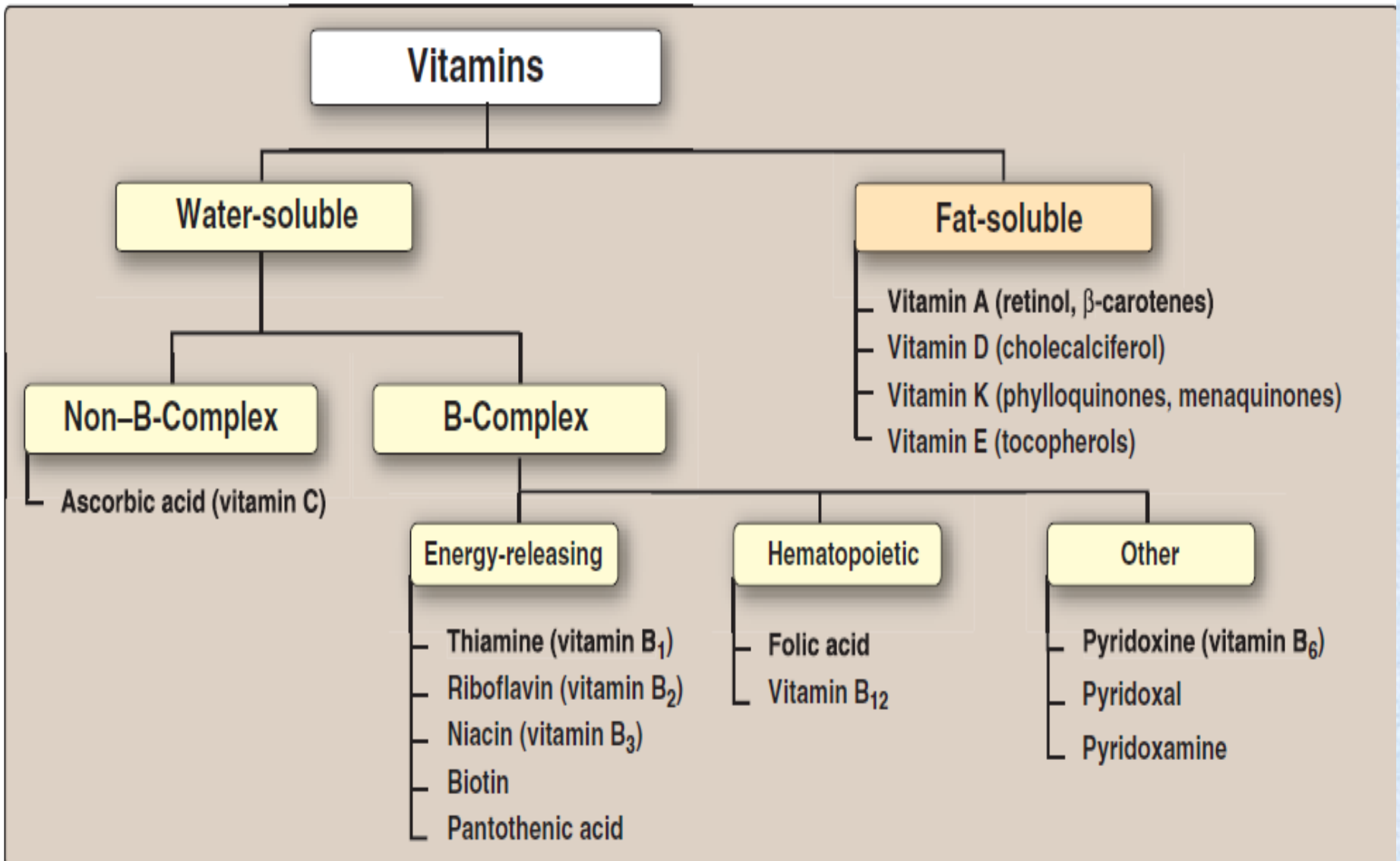
**PYRIDOXINE (VIT. B6), BIOTIN ,FOLIC ACID  
(VIT. B9) & CYANOCOBALAMIN (VIT. B12)**

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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

## PYRIDOXINE (VIT. B6)

- Water-soluble
- White crystalline compound that is stable to heat and strong acids
- 3 active forms: Pyridoxine Pyridoxamine  
Pyridoxal



## Function

- Helps make red blood cells
  - Helps in amino acid and fatty acid metabolism
- Aids in normal functioning of nervous tissue

## Sources

• Liver • Muscle meats • Yeast • Legumes • Whole grain cereals • Wheat germ • Wheat bran

## Deficiency

- Early deficiency signs
- Weakness
- Irritability • Nervousness • Insomnia
- Later deficiency signs • Convulsions, peripheral neuropathy • Anemia- microcytic hypochromic anemia refractory to iron therapy • Lesions around lips and eyes (red, crusty)

## **Drugs predisposing to pyridoxine deficiency:**

- INH • Estrogens
- Penicillamine
- Cycloserine



# BIOTIN (VIT. H)

- Unlikely to have deficiency
- Is blocked by raw egg whites
- Active biological substance

## Function

- Stimulates the growth of yeast and bacteria
- Functions as a coenzyme for reactions involving the addition of carbon dioxide in the formation of purines

## Sources

- The richest sources are liver, kidney, milk, egg yolk and yeast , peanuts
- Synthesised in the intestines by microorganisms

## Deficiency

- Dermatitis
- Glossitis
- Loss of appetite and sleep, anemia • Nausea
- Muscular pains
- Hyperesthesia (increased skin sensitivity)
- Paresthesia (burning and prickling sensation)
- Alopecia

## FOLIC ACID (VIT. B9)

- Yellow crystalline substance
- Sparingly soluble in water

### Function

- Essential for the manufacture and maturation of blood cells
  - Necessary for the normal functioning of the hematopoietic system
- Prevent anemia, some birth defects and heart disease.

## Sources

- Liver • Kidney • Yeast • Dark green leafy vegetables • Asparagus • Broccoli • Soybeans and nuts • Orange juice

## Deficiency

- Disorders of malabsorption associated with infectious disease (tropical diseases) or certain metabolic and endocrine disorders
- Megaloblastic anemia of pregnancy
- Paresthesia
- Angular cheilosis and gingivitis
- Impaired immunity
- Folic acid def. in mothers predisposes to neural tube defects in the babies



# CYANOCOBALAMIN (VIT. B12)

- Consist of a cyanide ion and a cobalt ion
- Not a single substance but consist of several closely related compounds having similar activity
- By product of streptomycin

## Function

- Plays a biomechanical role in the maintenance of myelin
- Involved in the synthesis of nucleoproteins
- It is essential for formation and maturation of red blood cells



## Sources

- Occurs primarily in animal foods, and liver is the richest source • Meat • Eggs • Milk • Cheese • Fish

## Deficiency

- Pernicious anemia
- Usual complaints are weakness, numbness and tingling in the extremities
- Patients may have difficulty in walking and coordination of movements
- Vibratory sense may be absent
- Patient may have a lemon-yellow complexion as a result of jaundice caused by red cell destruction, early graying of hair, fast heartbeat, ankle swelling and peripheral neuritis
- Megaloblastic anemia

## DAILY REQUIREMENT OF VITAMINS:

- **Vit B6** Infants:0.2-0.5mg Children: 0.5-1.5mg Adolescents: 1.5-2mg
- **Vit B12** Infants:0.3-0.5  $\mu\text{g}$  Children: 1-2  $\mu\text{g}$
- **Folic acid** Infants- 25-35  $\mu\text{g}$  Children- 50-150  $\mu\text{g}$



Thank  
you