



WBBCS 2022



SCIENCE

VITAMINS



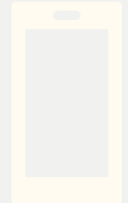
LIVE

12:30 PM



15 JUNE 2022

VITAMINS





VITAMIN

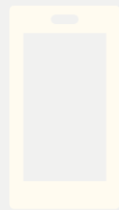
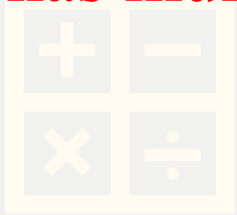
- The term vitamin is derived from the word “vitamine”, coined in 1912 by Polish biochemist Casimir Funk, who isolated a complex of micronutrients essential to life.
- A vitamin is an organic molecule that is an essential micronutrient that an organism needs in small quantities for the proper functioning of its metabolism.

Casimir Funk.





- Vitamins show the importance of balance in human life.
- **Vitamins** are organic (carbon-containing) nutrients obtained through the diet and essential in small amounts for normal metabolic reactions.
- Each vitamin is typically used in multiple different catalysts and therefore has multiple functions.



VITAMIN

FAT SOLUBLE

WATER SOLUBLE

A

D

E

K

B

C



B-1 Thiamin (Vitamin B)

- Important in:
 - Producing energy from carbohydrates
 - proper nerve function
 - stabilizing the appetite
 - promoting growth and good muscle tone
 - ATP production

B-1 Deficiency

- Loss of appetite
- Weakness & Feeling tired
- Insomnia
- Loss of weight
- Depression
- Heart & Gastrointestinal problems

➤ **Riboflavin**, also known as **vitamin B2**, is a vitamin found in food and used as a dietary supplement.

Food sources include eggs, green vegetables, milk and other dairy product, meat, mushrooms, and almonds.

➤ **B-2 Deficiency**

- Itching and burning eyes
- Cracks and sores in mouth and lips
- Bloodshot eyes
- Dermatitis
- Oily skin
- Digestive disturbances



➤ **Niacin**, also known as nicotinic acid, is an organic compound and a form of **vitamin B3**, an essential human nutrient.

Niacin is obtained in processed foods, with highest contents in packaged foods, tuna, salmon, some vegetable and other animal sources.

• **B-3 Deficiency:**

- Pellegra
 - disease caused by B-3 deficiency
- gastrointestinal disturbance, loss of appetite
- headache, insomnia, mental depression
- fatigue, aches, and pains
- nervousness

Vitamin B5 (Pantothenic acid)

Deficiency: Very unlikely. Only in severe malnutrition may one notice tingling of feet.

Toxicity: Nausea, heartburn and diarrhea may be noticed with high dose supplements.

Sources: Broccoli, lentils, split peas, avocado, whole wheat, mushrooms, sweet potato, sunflower seeds, cauliflower, green leafy vegetables, eggs, squash, strawberries, liver

➤ **Vitamin B6(PYRIDOXINE)** is part of the vitamin B group of essential nutrients. Its active form, **pyridoxal 5'-phosphate**.

➤ **B-6 Deficiency**

- nervousness, insomnia
- loss of muscle control, muscle weakness
- arm and leg cramps
- water retention
- skin lesions



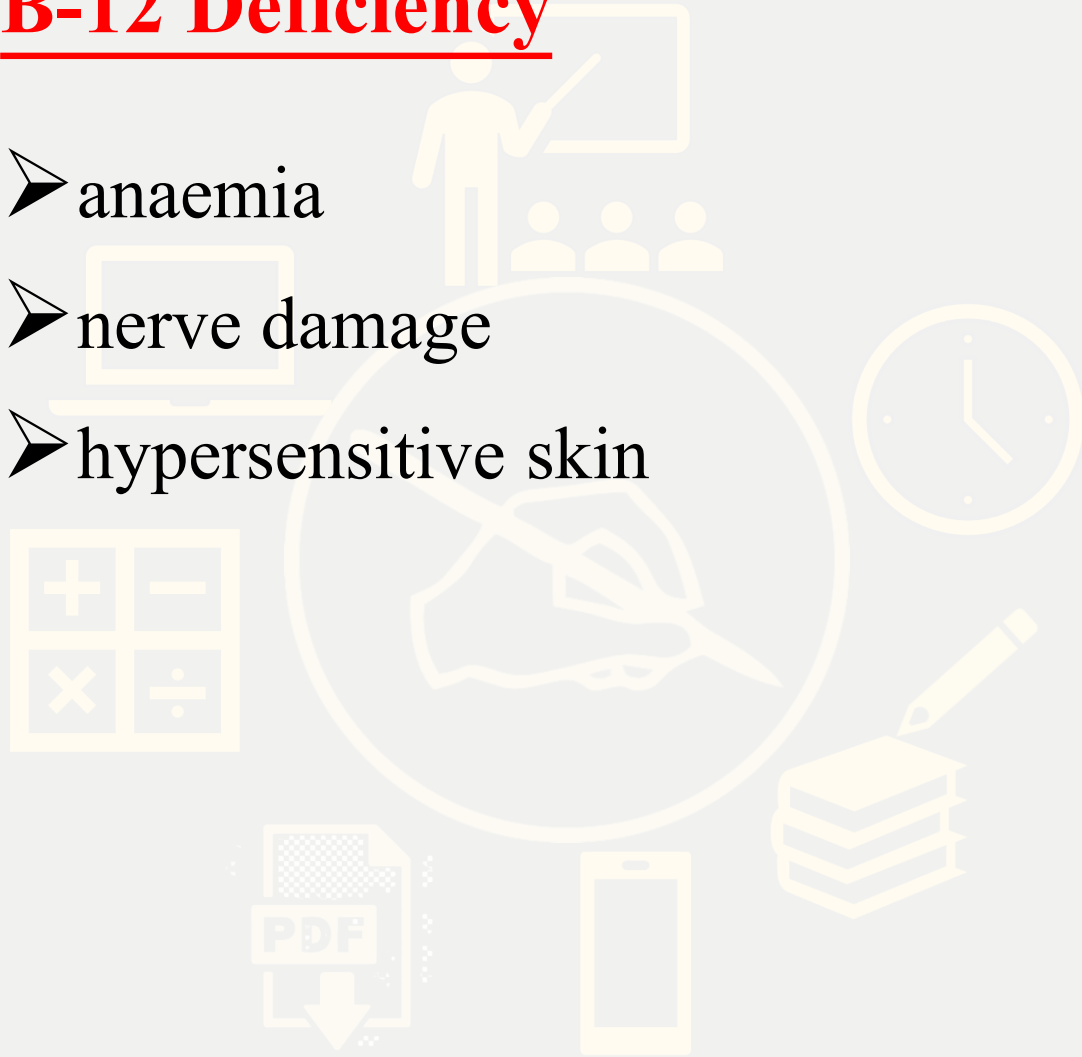
B-12 Cobalamin

➤ Important in:

- proper nerve function
- production of red blood cells
- metabolizing fats and proteins
- prevention of anaemia
- energy production

B-12 Deficiency

- anaemia
- nerve damage
- hypersensitive skin





Vitamin A- RETINOL

- Fat-soluble
 - One of the most active, usable forms
- Food sources:
 - animal: Fish in general, and dairy products;
 - Plant: orange, ripe yellow fruits, leafy vegetables, carrots, pumpkin, squash, spinach;
- **Deficiency disease**
 - Night blindness, hyperkeratosis, and keratomalacia

Vitamin C- ASCORBIC ACID

- Ascorbic acid (Toxic to viruses, bacteria, and some malignant tumor cells)
- Antioxidant
- water-soluble
- **Sources of Vitamin C:**
- Guava, Broccoli, Red Bell Pepper, Orange Juice, Strawberries, Tomato Juice, Raw Tomato, Sweet Potato, Tangerine, Spinach, Leafy Greens, Berries, Citrus Fruits.

VITAMIN-D- cholecalciferol.

Vitamin D is a group of fat-soluble secosteroids responsible for increasing intestinal absorption of calcium, magnesium, and phosphate, and multiple other biological effects. In humans, the most important compounds in this group are **vitamin D₃** (also known as cholecalciferol) and **vitamin D₂** (ergocalciferol).

DEFFICIENCY- Rickets, osteoporosis

Vitamin E- TOCOPHEROL

What is it?

- Fat soluble
- Antioxidant
- Deficiency is very rare; mild hemolytic anemia in newborn infants
- Source: Many fruits and vegetables, nuts and seeds, and seed oils.

Vitamin K - Vitamin K phylloquinone

Vitamin K plays a key role in helping the blood clot, preventing excessive bleeding. Unlike many other vitamins, **vitamin K** is not typically used as a dietary supplement.

Vitamin K

Deficiency: Tendency to bleed or hemorrhage and anemia.

Sources: Broccoli, green leafy vegetables, parsley, watercress, asparagus, Brussels sprouts, green beans, green peas, carrots.

Vitamin deficiency diseases chart

Vitamin generic	Vitamin chemical name(s)	Deficiency disease
Vitamin A	all-trans-Retinol	Night blindness, hyperkeratosis, and keratomalacia
Vitamin B1	Thiamine	Beriberi, Wernicke-Korsakoff syndrome
Vitamin B2	Riboflavin	Ariboflavinosis, glossitis, angular stomatitis

Vitamin generic	Vitamin chemical name(s)	Deficiency disease
Vitamin B3	Niacin, Niacinamide, Nicotinamide riboside	Pellagra
Vitamin B5	Pantothenic acid	Paresthesia
Vitamin B6	Pyridoxine, Pyridoxamine, Pyridoxal	Anemia, Peripheral neuropathy
Vitamin B7	Biotin	Dermatitis, enteritis
Vitamin B9	Folates, Folic acid	Megaloblastic anemia and deficiency during pregnancy is associated with birth defects

Vitamin generic	Vitamer chemical name(s)	Deficiency disease
Vitamin B12	Cyanocobalamin	Pernicious anemia
Vitamin C	Ascorbic acid	Scurvy
Vitamin D	Calciferol	Rickets and osteomalacia
Vitamin E	Tocopherols, Tocotrienols	mild hemolytic anemia in newborn infants
Vitamin K	Phylloquinone, Menaquinones	Bleeding diathesis

Thank
you

