

VITAMINS

Definition of Vitamins

Vitamins are organic compounds required in very small amounts for normal growth, metabolism, and maintenance of health. They do not provide energy directly but help the body use carbohydrates, proteins, and fats efficiently.

Classification of Vitamins

Vitamins are divided into two groups:

1. Fat-Soluble Vitamins

These are stored in the liver and fatty tissues.

- Vitamin A
- Vitamin D
- Vitamin E
- Vitamin K

2. Water-Soluble Vitamins

These dissolve in water and are not stored much in the body.

- Vitamin B-complex
- Vitamin C

1.Fat-Soluble Vitamins

i) Vitamin A

Chemical Name : Retinol

Sources

- Carrot
- Spinach
- Mango
- Papaya
- Milk
- Egg yolk
- Fish liver oil

Functions

- Maintains normal vision
- Keeps skin healthy
- Helps growth and immunity

Deficiency Diseases

- Night blindness
- Xerophthalmia (dry eye)
- Poor immunity

Excess

- Headache
- Liver damage
- Skin irritation

ii) Vitamin D

Chemical Name : Calciferol

Sources

- Sunlight
- Fish oil
- Egg yolk
- Butter
- Milk

Functions

- Helps absorption of calcium and phosphorus
- Maintains healthy bones and teeth

Deficiency Diseases

- Rickets in children
- Osteomalacia in adults

Excess

- Kidney stone
- Calcium deposition in tissues

iii) Vitamin E

Chemical Name : Tocopherol

Sources

- Vegetable oils
- Nuts
- Seeds
- Green vegetables

Functions

- Antioxidant
- Protects cell membranes
- Helps reproductive health

Deficiency

- Muscle weakness
- Nerve problems

iv) Vitamin K

Chemical Name : Phylloquinone

Sources

- Green leafy vegetables
- Cabbage
- Cauliflower
- Produced by intestinal bacteria

Functions

- Blood clotting
- Bone metabolism

Deficiency

- Excessive bleeding
- Delayed clotting

2. Water-Soluble Vitamins

i) Vitamin B-Complex

These vitamins mainly help in energy metabolism.

a) Vitamin B1

Chemical Name : Thiamine

Sources

- Whole grains
- Pulses
- Nuts
- Yeast

Functions

- Helps carbohydrate metabolism
- Proper nerve function

Deficiency Disease : Beriberi

b) Vitamin B2

Chemical Name : Riboflavin

Sources

- Milk
- Eggs
- Green vegetables

Functions

- Energy production
- Healthy skin and eyes

Deficiency

- Cracked lips
- Skin disorders

c) Vitamin B3

Chemical Name : Niacin

Sources

- Meat
- Fish
- Groundnut
- Cereals

Functions

- Helps metabolism
- Maintains nervous system

Deficiency Disease

- Pellagra

Symptoms of Pellagra

- Dermatitis
- Diarrhea
- Dementia

d) Vitamin B5

Chemical Name : Pantothenic Acid

Functions

- Metabolism of fats and carbohydrates

Deficiency

Rare

e) Vitamin B6

Chemical Name : Pyridoxine

Sources

- Fish
- Banana
- Potato
- Cereals

Functions

- Protein metabolism
- Formation of hemoglobin

Deficiency

- Anemia
- Skin disorders

f) Vitamin B7

Chemical Name : Biotin

Functions

- Fat metabolism
- Healthy skin and hair

Deficiency

- Hair loss
- Skin rash

g) Vitamin B9

Chemical Name : Folic Acid

Sources

- Green leafy vegetables

- Liver
- Beans

Functions

- Formation of red blood cells
- DNA synthesis

Deficiency

- Megaloblastic anemia

h) Vitamin B12

Chemical Name : Cobalamin

Sources

- Meat
- Fish
- Egg
- Milk

Functions

- Formation of red blood cells
- Nervous system maintenance

Deficiency

- Pernicious anemia
- Nerve damage

ii) Vitamin C

Chemical Name : Ascorbic Acid

Sources

- Citrus fruits
- Amla
- Guava
- Tomato

Functions

- Wound healing
- Increases immunity
- Helps iron absorption

Deficiency Disease

- Scurvy

Symptoms of Scurvy

- Bleeding gums
- Weakness
- Delayed wound healing

Importance of Vitamins

- Essential for normal growth
- Maintain healthy skin, bones, and nerves
- Improve immunity
- Help metabolic reactions
- Prevent deficiency diseases

Difference Between Fat-Soluble and Water-Soluble Vitamins

Fat-Soluble Vitamins	Water-Soluble Vitamins
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Stored in body	Not stored much
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Excess may be toxic	Excess removed in urine
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Absorbed with fats	Dissolve in water
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Vitamins A, D, E, K	Vitamins B and C
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Diseases Caused by Vitamin Deficiency

Vitamin	Deficiency Disease
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Vitamin A	Night blindness
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Vitamin Deficiency Disease

Vitamin B1 Beriberi

Vitamin B3 Pellagra

Vitamin C Scurvy

Vitamin D Rickets

Vitamin K Excess bleeding

Diseases Caused by Vitamin Deficiency

Vitamin	Deficiency Disease
Vitamin A	Night blindness
Vitamin B1	Beriberi
Vitamin B3	Pellagra
Vitamin C	Scurvy
Vitamin D	Rickets
Vitamin K	Excess bleeding

Some Model MCQs on Vitamins

Q1 Which vitamin is known as Retinol?

- A) Vitamin C
- B) Vitamin A
- C) Vitamin D
- D) Vitamin K

Answer: B) Vitamin A

Q2 Deficiency of Vitamin A causes:

- A) Night blindness
- B) Scurvy
- C) Rickets
- D) Beriberi

Answer: A) Night blindness

Q3 Which vitamin is synthesized in the skin by sunlight?

- A) Vitamin A
- B) Vitamin D
- C) Vitamin E
- D) Vitamin C

Answer: B) Vitamin D

Q4 Rickets is caused by deficiency of:

- A) Vitamin A
- B) Vitamin D
- C) Vitamin C
- D) Vitamin B12

Answer: B) Vitamin D

Q5 Which vitamin is essential for blood clotting?

- A) Vitamin A
- B) Vitamin D
- C) Vitamin E
- D) Vitamin K

Answer: D) Vitamin K

Q6 Scurvy is due to deficiency of:

- A) Vitamin A
- B) Vitamin B1
- C) Vitamin C
- D) Vitamin D

Answer: C) Vitamin C

Q7 Which vitamin is also called Ascorbic acid?

- A) Vitamin A
- B) Vitamin B12
- C) Vitamin C
- D) Vitamin E

Answer: C) Vitamin C

Q8 Beriberi is caused by deficiency of:

- A) Vitamin B1
- B) Vitamin B2
- C) Vitamin B6
- D) Vitamin B12

Answer: A) Vitamin B1

Q9 Vitamin B1 is chemically known as:

- A) Thiamine
- B) Riboflavin
- C) Niacin
- D) Pyridoxine

Answer: A) Thiamine

Q10 Pellagra is caused by deficiency of:

- A) Vitamin B1
- B) Vitamin B2
- C) Vitamin B3
- D) Vitamin B6

Answer: C) Vitamin B3

Q11 The three classical symptoms of Pellagra are:

- A) Dermatitis, Diarrhea, Dementia
- B) Fever, Cough, Cold
- C) Pain, Swelling, Redness
- D) Anemia, Jaundice, Edema

Answer: A) Dermatitis, Diarrhea, Dementia

Q12 Which vitamin helps absorption of calcium?

- A) Vitamin A
- B) Vitamin D
- C) Vitamin E
- D) Vitamin K

Answer: B) Vitamin D

Q13 Which vitamin acts mainly as an antioxidant?

- A) Vitamin A
- B) Vitamin D
- C) Vitamin E
- D) Vitamin K

Answer: C) Vitamin E

Q14 Which of the following is a fat-soluble vitamin?

- A) Vitamin B1
- B) Vitamin B12
- C) Vitamin C
- D) Vitamin E

Answer: D) Vitamin E

Q15 Which of the following is NOT a fat-soluble vitamin?

- A) Vitamin A
- B) Vitamin D
- C) Vitamin C
- D) Vitamin K

Answer: C) Vitamin C

Q16 Which vitamin deficiency causes bleeding gums?

- A) Vitamin A
- B) Vitamin B1
- C) Vitamin C
- D) Vitamin D

Answer: C) Vitamin C

Q17 Pernicious anemia is associated with deficiency of:

- A) Vitamin B1
- B) Vitamin B6
- C) Vitamin B12
- D) Vitamin C

Answer: C) Vitamin B12

Q18 Which vitamin is important for DNA synthesis and red blood cell formation?

- A) Vitamin A
- B) Folic acid (Vitamin B9)
- C) Vitamin D
- D) Vitamin E

Answer: B) Folic acid (Vitamin B9)

Q19 Which vitamin is produced by intestinal bacteria in small amounts?

- A) Vitamin A
- B) Vitamin D
- C) Vitamin K
- D) Vitamin C

Answer: C) Vitamin K

Q20 Which of the following pairs is correctly matched?

- | Vitamin | Disease |
|---------------|-----------------|
| A) Vitamin A | Scurvy |
| B) Vitamin C | Rickets |
| C) Vitamin D | Rickets |
| D) Vitamin B1 | Night blindness |

Answer: C) Vitamin D — Rickets

Very Important One-Line MCQs

Night blindness → Vitamin A deficiency

Rickets → Vitamin D deficiency

Scurvy → Vitamin C deficiency

Beriberi → Vitamin B1 deficiency

Pellagra → Vitamin B3 deficiency

Pernicious anemia → Vitamin B12 deficiency

Blood clotting → Vitamin K

Antioxidant vitamin → Vitamin E

Exam Tip

Most asked

Remember the mnemonic:

A → Eyes (Night blindness)

B1 → Beriberi

B3 → Pellagra

C → Scurvy

D → Rickets/Osteomalacia

K → Clotting