

| Vitamin | Function | Food sources | Symptom of deficiency | Symptom of excess |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| Vitamin B12 | <ul style="list-style-type: none"> Helps produce red blood cells Maintains healthy nervous system Promotes appetite Helps in protein metabolism | Dairy products, fish, eggs, liver, meat | <ul style="list-style-type: none"> Anaemia Slowness in thinking, emotional chaos, poor memory Weakened sensation | <ul style="list-style-type: none"> Uncommon |
| Vitamin C | <ul style="list-style-type: none"> Helps synthesize collagen; promotes the growth and repair of cells, gum, teeth, blood vessels and bones Helps healing after operation and injury Helps calcium and iron absorption Enhances immunity | Citrus fruits (mandarin, orange, grapefruit, lemon), strawberry, black current, kiwi fruit, tomato, green leafy vegetables, green pepper | <ul style="list-style-type: none"> Scurvy Gum inflammation and bleeding, fall of teeth Susceptibility to skin bleeding, burst of capillary vessels Weakness, fatigue Bone pain, swollen and aching joints | <ul style="list-style-type: none"> Abdominal pain Diarrhea Kidney stone |

Should we take vitamin supplements?

There are various kinds of vitamin supplements available on the market. Should we take these “tonics” to maintain good health?

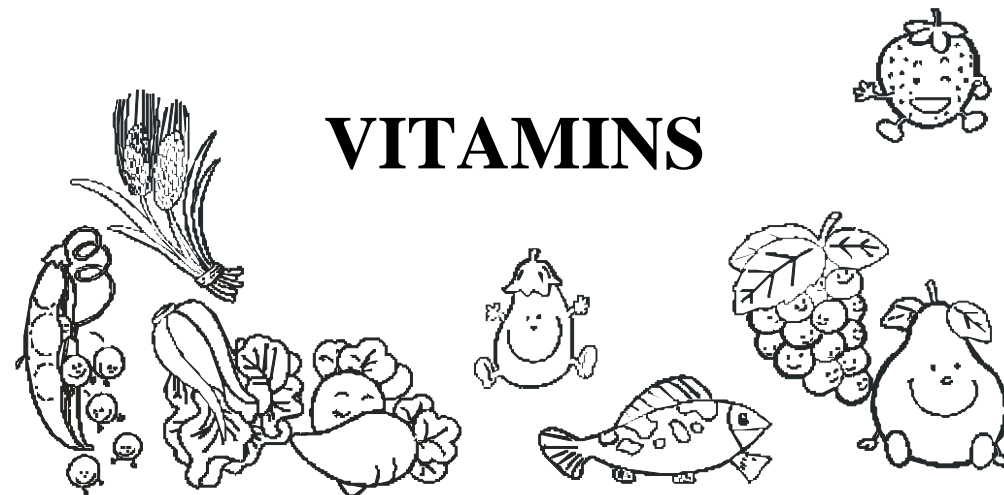


We should maintain a balanced diet and should not be food picky. Healthy eating food pyramid provides general guideline for healthy eating and you will absorb sufficient and appropriate vitamins from your daily intake. There is no need to take extra nutritional supplements to stay healthy.

If you need to have diet control because of any disease, you should consult a doctor or dietitian. Never take any vitamin pill or supplement on your own.



VITAMINS



The basic nutrients of food include carbohydrate, protein, fat, vitamins, and minerals. The body needs to obtain appropriate vitamins from food to maintain the normal functions of cells and organs, and to promote growth and development. Any lack or excess amounts of vitamins in the body may have side effects.

Functions and Categories

- ✧ Vitamins have various functions that help to regulate metabolism, to prevent chronic diseases (such as heart disease and cancer), and to maintain normal appetite, mental health, and immunity.
- ✧ Vitamins can basically be classified into the following two categories:
 - (1) Fat-soluble vitamins
 - Include Vitamins A, D, E and K; dissolve in fats; and are absorbed with the help of fats that are in the diet
 - Excessive fat-soluble vitamins are stored in the liver and will not be eliminated from the body
 - (2) Water-soluble vitamins
 - Include Vitamins B and C, and dissolve in water
 - Excessive amount of water-soluble vitamins are excreted through urine and sweat
- ✧ The amount of vitamins in food is affected by the ways in which food is stored or cooked. Vitamins A and C and some Vitamins B can be destroyed under strong light, so food rich in those vitamins should be stored in dim places or in the fridge.
- ✧ Vitamin C and some Vitamins B are soluble in water and can be destroyed under heat, and thus we should avoid
 - (1) washing them too much
 - (2) cooked them too long time

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| Vitamin A | <ul style="list-style-type: none"> • Maintains eye health • Promotes growth and development, maintains healthy bones and teeth • Enhances the protection and regeneration of cells and mucous membrane • Maintains healthy respiratory and intestinal tracts • Maintain healthy hair, nails and skin | Dairy products, cod liver oil, liver, dark green and yellow vegetables and fruits | <ul style="list-style-type: none"> • Night blindness, dry eyes • Dry skin • Stomach discomfort • Poor growth • Weak bones and teeth | <ul style="list-style-type: none"> • Dry, scaly, peeling, and itchy skin, rash • Hair loss • Poor appetite, fatigue • Vomiting, stomach discomfort • Liver injury • Headache, bone pain • Nervousness, irritability |
| Vitamin D | <ul style="list-style-type: none"> • Helps body absorb and utilize calcium and phosphorus, so as to maintain bones, teeth and brain healthy • Maintains normal calcium level in blood | Egg yolk, liver, cod liver oil, fish. Our skins also produces Vitamin D when exposed to sunlight | <ul style="list-style-type: none"> • Children: rickets • Adults: osteoporosis | <ul style="list-style-type: none"> • Calcified cartilage • High calcium level in the blood causes abnormal heart beat and damage to organs such as kidneys • Vomiting, diarrhea • Sore eyes • Itchy skin |
| Vitamin E | <ul style="list-style-type: none"> • Maintains normal conditions of cells, and healthy skin and tissues • Protects red blood cells • Antioxidation • Enhance immunity | Green leafy vegetables, whole-wheat cereals, nuts, egg yolk | <ul style="list-style-type: none"> • New born infants: haemolytic anaemia • Adults: weakness | <ul style="list-style-type: none"> • Low thyroxine level • Headache, dizziness, fatigue • Stomach discomfort, poor appetite |
| Vitamin K | <ul style="list-style-type: none"> • Helps blood clotting, prevent over bleeding • Maintains health of the liver | Green leafy vegetables, soya beans. The human body can also produce Vitamin K through germs in the colon | <ul style="list-style-type: none"> • Uncontrol bleeding from wounds due to clotting difficulty | <ul style="list-style-type: none"> • Can lead to liver damage |

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| Folic acid | <ul style="list-style-type: none"> • Helps produce cells and red blood cells • Promotes growth and reproductive functions | Dairy products, liver, whole-wheat cereals, beans, banana | <ul style="list-style-type: none"> • Anaemia • Decreased immunity • Fatigue • Stomach discomfort | <ul style="list-style-type: none"> • Uncommon |
| Vitamin B1 | <ul style="list-style-type: none"> • Helps carbohydrate and protein metabolism, thus enabling the body to get energy from food • Helps maintain normal function of the heart, muscles and digestive system • Promotes growth and development | whole-wheat cereals, fish, meat, various vegetables, beans, yeast | <ul style="list-style-type: none"> • Beriberi • Listlessness, insomnia, vomiting • Nervous system problems, depression • Growth retardation in children | <ul style="list-style-type: none"> • Uncommon |
| Vitamin B2 | <ul style="list-style-type: none"> • Helps in carbohydrate, protein and fat metabolism, enables the body to get energy from food • Maintains healthy mouth, lips, tongue, and eyes • Maintains healthy skin, hair and nails | Dairy products, eggs, meat, green leafy vegetables, liver, whole-wheat cereals, nuts, yeast | <ul style="list-style-type: none"> • Inflammation of the oral cavity, mouth corner and tongue • Itchy, dry and bloodshot eyes • Dry skin • Weakness | <ul style="list-style-type: none"> • Uncommon |
| Vitamin B3 | <ul style="list-style-type: none"> • Helps in carbohydrate and fat metabolism, enabling the body to get energy from food • Regulates cholesterol level • Maintains healthy skin, mucous membranes, tongue and the digestive system | Dairy products, fish, meat, poultry, vegetables, whole-wheat cereals | <ul style="list-style-type: none"> • Dyspepsia • Rough and inflamed skin • Listlessness | <ul style="list-style-type: none"> • Stomach discomfort, vomiting • Listlessness, headache, fatigue |
| Vitamin B6 | <ul style="list-style-type: none"> • Helps in protein metabolism • Helps produce red blood cells, hormones, enzymes and antibodies • Helps in transmission of nervous impulse | Dairy products, meat, whole-wheat cereals, green leafy vegetables, fish | <ul style="list-style-type: none"> • Anaemia • Nervousness, insomnia, depression • Muscle cramps | <ul style="list-style-type: none"> • Limb numbness, partial loss of sensation |