

Functions

Needed for the production of energy – helps cells convert carbohydrate into energy.
Healthy nervous System.

Effects of deficiency

Weak
Tired
Impaired growth
Reduced concentration

Effect of heat and processing

Destroyed by light and pH
Soluble in water

**Vitamin B1
(Thiamin)**



Water soluble



Sources

Cereals (bread), rice, pasta, beef, liver, egg

Functions

Healthy growth, vision, skin, hair, nails.

Effects of deficiency

Cracked lips
Itchy eyes and skin
Sore throat.

Effect of heat and processing

Destroyed by light and pH
Soluble in water

**Vitamin B2
(Riboflavin)**



Water soluble

Vitamin B2



Sources

Meat, egg, liver, fish
legumes, nuts, milk,
leafy greens

Functions

Release energy from Carbohydrates.
Maintaining a healthy nervous system and skin

Effects of deficiency

Nausea
Dizziness
Pellagra

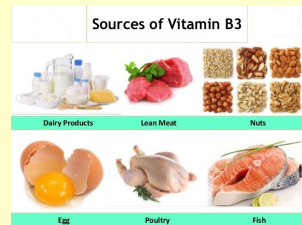
Effect of heat and processing

Destroyed by light and pH
Soluble in water

**Vitamin B3
(Niacin)**



Water soluble



Sources

Wheat, nuts, meat
and fish

Functions

Development of DNA and nervous system
Essential for healthy growth of developing babies
Works with Vitamin B12 to make red blood cells

Effects of deficiency

Anaemia, cramp, tiredness, mouth sores

Spina bifida in babies

Effect of heat and processing

Destroyed by light and pH
Soluble in water

**Vitamin B9
(Folic Acid)**



Water soluble



Sources

Liver, peas and leafy greens

Functions

Healthy nerve cells, and production of DNA and RNA, the body's genetic material.

Works closely with vitamin B9, (folic acid), to help make red blood cells and to help iron work better in the body.

Effects of deficiency

Depression and fatigue. Vegans need to supplement diet with fortified foods such as yeast extract products, soya products, breakfast cereals or supplements. Pernicious anaemia accompanied by degeneration of nerve tracts in the spinal cord.

Effect of Heat and processing

Destroyed by light and pH
Soluble in water
If in contact with iron and copper it is susceptible to loss of B12.

Vitamin B12 (Cobalamin)



Water soluble



Sources

Animal products including meat, fish, eggs, poultry and milk

Functions

An anti-oxidant essential for fighting infections and reducing the chance of cancer.

Protects from infections.

Keeps blood vessels healthy

Effects of deficiency

Poor healing of wounds, cramp.

Anaemia

Scurvy (tiredness & bleeding gums)

Effect of heat and processing

Soluble in water

Lost in storage and ALL preparation methods

Lost due to cooking

Lost in direct light

VERY SENSITIVE

Vitamin C (Ascorbic Acid)



Water soluble



Sources

Fruit - especially citrus fruits and blackcurrants
Vegetables - especially tomato, peppers and spinach

Functions

Healthy eyesight and vision in dim light and night time.

Healthy membranes of nose, throat, mouth, lungs.

Healthy immune system.

Vitamin A is an anti-oxidant which helps to lower risk of cancer

Effects of deficiency

(rare in UK)

Night blindness

Weak immune system

Dry skin & membranes

Effect of excess

Over time, too much can weaken bones.

Food containing high levels (eg liver) should be avoided during pregnancy

Effect of Heat and processing

Some lost in dried food
Loss in frying as it is fat soluble

Vitamin A (Retinol or Carotene)



Fat soluble



Sources

Retinol – eggs, oily fish, liver, milk, butter, cheese

Carotene – carrot, sweet potato, apricots, broccoli, spinach

Functions

It helps the body absorb calcium to form strong bones and teeth.

Effects of deficiency

Rickets

Heart failure

Pregnant women, babies and children under 5 are more at risk.

People over the age of 65 are also at risk from Osteoporosis

Effect of excess

If you absorb too much calcium it can lead to kidney damage.

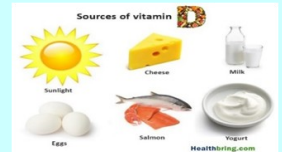
Effect of heat and processing

Vitamin D is destroyed by heat.

Vitamin D



Fat soluble



Sources

oily fish, milk, cheese, sun light, yogurt, eggs, liver and fortified foods.

Functions

It helps maintain muscle and nerve function.
It also helps to maintain bones and teeth.
Helps with blood clotting

Effects of deficiency

Weak/fragile bones
Muscles and nerves do not function properly

Effects of excess

This is rare, but excess is stored in the kidneys which can increase the risk of kidney stones

Effect of heat and processing

Calcium is not really affected by heat or processing.

Calcium (Ca)



Mineral

Calcium Rich Foods



Sources

Milk, cheese, bread, hard water.

Functions

To make oxygen carrying proteins (haemoglobin & myoglobin), production of red blood cells.
Converting blood sugar to energy.
Production of enzymes.

Effects of deficiency

Anaemia
Pale skin
Tongue swelling
Headaches
Irregular heartbeat

Effects of excess

Too much is toxic and can cause stomach pains, nausea and constipation

Effect of Heat and processing

Little effect

Iron (Fe)



Mineral

Foods High in Iron



Sources

Red meat, poultry, seafood, beans, dark leafy greens, dried fruit.

Functions

Maintains healthy skin and eyes, and strengthens the body's natural defence against illness and infection (the immune system)

Effects of deficiency

Difficulty with coordination
Muscle pain
Visual disturbances

Effects of excess

Too much interferes with blood clotting and can cause nausea

Effect of heat and processing

Soluble in water so potentially lost in cooking
Loss in frying as it's fat soluble
Loss in light and air

Vitamin E (tocopherol)



Fat soluble

Sources of Vitamin E



Sources

Plant oils – such as soya, corn and olive oil
Nuts and seeds
Wheatgerm – found in cereals and cereal products

Functions

Assists with clotting of blood and healing wounds.
It helps maintain our immune system

Effects of deficiency

Bruising and bleeding.

Babies are at risk of vitamin K deficiency bleeding if they have insufficient Vitamin K before birth or if breast milk is low in Vitamin K. A dose of Vitamin K is injected into baby just after birth.

Effect of Heat and processing

Vitamin K is reduced in light conditions—store in a cool dark place

Vitamin K



Fat soluble



Sources

peas, cereals, beans, broccoli, spinach, green leafy veg.

Functions

Helps to control the amount of water in the body, helps the body use energy and helps to control the nerves and muscles.

Effect of too much

Can lead to high blood pressure, can damage heart and kidneys and can also lead to strokes.

Effects of deficiency

Symptoms are not usually very specific and can include changes to a person's mental state, headache, nausea, vomiting, tiredness,

Effect of Heat and processing

Reduces when cooked, especially in water

Sodium (Na)



Mineral

Foods High in Sodium



Sources

Salt, processed foods; crisps, ready meals, bacon, ham, stock cubes, yeast extracts

Functions

Used for growth and repair of body cells and tissues.

Also, with calcium, phosphorus provides structure and strength in bones and teeth

Effects of deficiency

May cause bone diseases such as rickets in children

May cause osteomalacia in adults

Effect of excess

Too much makes it harder for the body to absorb calcium

Effect of heat and processing

Heat can reduce the amount of phosphorous intake

Phosphorus (P)



Mineral



Sources

Animal products- such as cheese and eggs

Nuts and seeds- such as pumpkin and brazil

Functions

Strengthens teeth, hardens tooth enamel and helps prevent tooth decay

Effects of deficiency

Weak teeth and enamel
Tooth decay

Effect of excess

Too much is toxic and can lead to brown teeth, bone problems and cancer

Effect of excess

Brown coloured teeth
Bone problems

Fluoride (F)



Foods High in Fluoride



Sources

Fish, tea, fluoridated water and dental products

Trace element:

We need them in very tiny amounts

Functions

To produce thyroid hormones

Effects of deficiency

Thyroid disorders
Goitre (neck swelling)
Complications in unborn babies

Effect of heat and processing

Some is lost during cooking, especially by boiling

Iodine (I)



Sources

Salt water (brine), fish, seaweed, dairy foods, vegetables

Trace element:

We need them in very tiny amounts