**Vitamin A**

**Fat Soluble Vitamin**

- Maintains hair and skin cells.
- Helps prevent night blindness.

**Food Sources:**
- Orange and dark green vegetables, dairy products, and fish oils

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**Vitamin D**

**Fat Soluble Vitamin**

- Works with calcium to build and maintain healthy bones and teeth.

**Source:**
- Manufactured by the body with exposure to the sun. **“Sunshine Vitamin”**
- Commonly added (fortified) to milk and fish oils
**Vitamin E**  
Fat Soluble Vitamin

**Protects** membranes and red blood cells

**Food Sources:**  
Vegetable oils, whole grains, most fruits and vegetables, nuts, and seeds

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**Vitamin K**  
Fat Soluble Vitamin

**Aids in blood clotting**

**Food Sources:**  
Dark green leafy vegetables or liver
**Vitamin C**  
Water Soluble Vitamin

Aids in wound healing, cell function, formation of collagen, and iron absorption.

**Food Sources:**  
Citrus Fruit, green leafy vegetables, broccoli, peppers, and tomatoes

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**Folate/Folic Acid (B9)**  
Water Soluble Vitamin

Helps form red and white blood cells, RNA, and DNA.

**Food Sources:**  
Beans, peas, lentils, green leafy vegetables, and whole grains
Thiamin (B1)
Water Soluble Vitamin

Helps nerve tissue, digestive system, and energy

Food Sources:
Milk, whole grains, pork, dried beans, and nuts

Riboflavin (B2)
Water Soluble Vitamin

Converts food into energy

Food Sources:
Milk, cheese, whole grains, green leafy vegetables, fish, and eggs
Niacin (B3)
Water Soluble Vitamin

Converts food into energy

Food Sources:
Milk, whole grains, legumes, fish, and poultry

Calcium
Macro Mineral

Helps bones, teeth, blood clotting, muscles, and nerves

Food Sources:
Dairy products, tofu, broccoli, parsley, and spinach
Phosphorus
Macro Mineral

Phosphorus is a component of bones, teeth, DNA, RNA, and cell membranes. It also releases energy.

Food Sources:
Whole grains, meat, eggs, milk, and cheese.

Magnesium
Macro Mineral

Builds bones and regulates nerves and muscles

Food Sources:
Dark green leafy vegetables, whole grain products, and nuts.
Iron
Micro Mineral

Promotes healthy red blood cells

Food Sources:
Red meat, poultry, fish, legumes, and fortified foods

Iodine
Micro Mineral

A component of thyroid hormones

Food Sources:
Iodized salt, seafood, and milk
Fluoride
Micro Mineral

A component of teeth and bones, and helps prevent dental cavities

Food Sources:
Fluoridated water, fish, and some dental products like toothpaste

Zinc
Micro Mineral

Helps metabolize food, promotes growth, and assists in the production of the oxygen-carrying part of red blood cells.

Food Sources:
Meat, liver, seafood, milk, and eggs
Copper
Micro Mineral

Frees iron from storage and promotes the functionality of connective tissue

Food Sources:
Shellfish, nuts, and legumes

B Vitamins

B Vitamins help turn carbohydrates into energy and promote a healthy nervous system.

A family of 8 vitamins including thiamin (B1), riboflavin, niacin, pantothenic acid, biotin, vitamin B6, folate, and vitamin B12.
Night Blindness, Poor Eyesight
Vitamin A deficiency

Eyes become sensitive to light and have difficulty seeing in dim light.

Beriberi
Thiamin (B1) deficiency

Swelling of the heart, numbness of hands and feet, mental confusion.
**Pellagra**

Niacin deficiency

A disease causing skin irritations, digestive problems, and swelling of the tongue. If not treated can result in mental disorder, or death.

**Spina bifida**

Folic Acid/Folate deficiency in early stages of pregnancy

A birth defect that occurs when the spine and spinal cord don’t form properly in the womb.
Scurvy
Vitamin C deficiency
A deficiency which leads to weakness, anemia, gum disease, and skin problems. It was a common disease of sailors when long sea voyages made it hard to get a steady supply of fresh produce.

Rickets
Vitamin D deficiency
Bones become weak and soft. This can result in bone deformities in growing children.
Jaundice
Caused by excess vitamin K

A yellowing of the skin or whites of the eyes caused by a build-up of the pigment bilirubin. Jaundice occurs when bilirubin builds up faster than the liver can break it down.

*Phototherapy is a treatment with a special light that helps rid the body of the bilirubin, making it easier for the liver to break it down.*

Osteoporosis
Calcium deficiency

When bones gradually lose their minerals. Bones become fragile and break easily and skeleton may shrink. Develops mostly in women and the elderly.
Anemia
Iron deficiency

Poor appetite, pale skin, fatigue and weakness caused by a decreased number of circulating red blood cells in the body.

Too much iron is not good for you either. It leads to damage of the liver and other body tissue.

Goiter
Iodine deficiency

An abnormal enlargement of the thyroid gland at the base of the neck.
**Fat-soluble Vitamins**

There are four fat-soluble vitamins.

- K
- A
- D
- E

These vitamins dissolve in fat.

The body can store fat-soluble vitamins, but they can be toxic in excessive amounts.

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**Water-soluble Vitamins**

Water-soluble vitamins include:

- All the B vitamins
- C vitamins

- These vitamins dissolve in water.

- The body uses what it needs and then excretes the rest in urine.

- Water-soluble vitamins do not become toxic.
Fun Facts

Did you know that red meats are the best source of iron?

The best sources of calcium are dairy products like milk, cheese, and yogurt.

Vocabulary

**Toxicity:** Too much of something (toxic/poisonous)

**Deficiency:** Not enough of something (shortage)
Fun Facts

Calcium and iron are the two most common mineral deficiencies in the United States.

Vocabulary

**Macro Minerals:**
Minerals needed in larger quantities in the body.

**Micro Minerals:**
Minerals needed in smaller quantities, but are just as essential as macro minerals.
Fun Facts About Minerals

• Most minerals help build strong bones and teeth.

• Others minerals are used to make substances that the body needs.

• Minerals are usually needed in tiny amounts, but are critical to health.

Fun Facts About Vitamins

• Water-soluble vitamins cannot be stored in the body, and must be replaced daily.

• Once absorbed into the body, Vitamin C only has a short life of 30 minutes in the bloodstream.
The Cooking Process

Vitamins and minerals can be destroyed by heat, water and air.

Macro vs. Micro Minerals

**Macro Minerals:**
- Calcium
- Magnesium
- Phosphorus

**Micro Minerals:**
- Copper
- Zinc
- Fluoride
- Iron
- Iodine