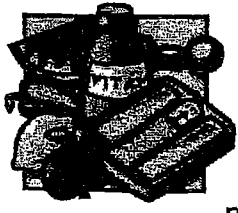


Name: _____

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Vitamins and Minerals



Vitamins and minerals are essential for optimal health and performance. They have no caloric value but enhance metabolic reactions, assist in transport of oxygen, give strength to body cells and help maintain fluid and electrolyte balance. In general, unless an individual is deficient, supplementation has not been proven to enhance performance. Eating a variety of foods, as recommended by the Canada Food Guide should meet daily vitamin and mineral needs.

Vitamin Types

1. Water Soluble - B complex and C

Water-soluble vitamins are not stored in the body and excesses, over and above body needs, are passed in the urine. Although rare, toxicity from water-soluble vitamins is possible when mega doses are ingested.

2. Fat Soluble - A, D, E and K

Fat-soluble vitamins are stored in the body fat particularly in the liver. Mega doses can lead to toxicity levels which may lead to generalized signs of skin rashes, diarrhea, vomiting.

Note: Individuals taking a "daily multiple vitamin" at a percentage of RDA are at low risk for toxicity compared to those individuals ingesting pharmacological doses (greater than 100 times RDA).

Antioxidant Vitamins

Antioxidant vitamins protect the body tissues and cell membranes from damage due to free radicals (molecules that have an electron without a partner). When electrons are paired they are stable, but when unpaired they become unstable and damage tissue. Intense exercise, stress, and environmental pollution can produce free radicals.

Antioxidant vitamins help protect the body from free radical damage. The most common are: carotene, vitamins C and E, and minerals sulfur and chromium. *Recent research indicates that green tea contains loads of antioxidants.*

VITAMIN SUMMARY: KEY SOURCES AND FUNCTIONS

Vitamin	Function	Source
A (carotene)	Maintenance of skin, hair, dental growth and vision	yellow & orange vegetables, green leafy vegetables
B ₁ (thiamine)	Release of energy from carbohydrates	fortified cereals, meat, riches, whole grains
B ₂ (riboflavin)	Release of energy from proteins, fats & CHOs	whole grains, milk, eggs, leafy green vegetables
B ₆ (pyridoxin) PYRIDOXAL	Tissue building & protein metabolism	fish, chicken, whole grains, bananas, meat
B ₁₂ (cobalamin)	Growth and development of nervous system & metabolism	meat, dairy, seafood
Biotin	Metabolism	cereals and grains, legumes
Folate (folic acid)	Red blood cell production	green leafy vegetables, beans and lentils
Niacin	Metabolism	meal, fish, poultry, dairy and peanuts
Pantothenic Acid	Energy production	meats, whole grains, legumes, vegetables, fruit
C (ascorbic acid)	Musculoskeletal structure, iron absorption	citrus fruits and vegetables (peppers)
D	Bone & teeth, growth, cardiac & nervous function	sunlight, fortified milk, fish and eggs
E	Protects blood cells, antioxidant	multigrains, nuts, wheat germ, vegetables
K	Blood clotting	leafy green vegetables, fruit and dairy, grains

MINERALS are involved in many different functions in the body from tissue building to hormone producing. They are divided into two categories:

1. **Macro** minerals (calcium, phosphorus and magnesium)
2. **Trace** minerals (iodine, zinc, and fluoride)

MINERAL SUMMARY: KEY SOURCES AND FUNCTIONS

Mineral	Function	Source
Calcium	Strength of teeth, bone, muscle contraction, blood clotting	milk & milk products
Chromium	CHO metabolism and insulin function	whole grains, brewers' yeast and corn oil
Copper	RBC production, bone growth	nuts, legumes, meat
Iodine	Metabolism and formation of thyroid hormones	Salt (iodized), seafood
Iron	Anti-stress, hemoglobin formation	meats, legumes
Magnesium	Skeletal development, CHO-metabolism, acid-base balance	nuts, green vegetables, whole grains
Manganese	Skeletal development, hormone production and metabolism	nuts, whole grains, fruits
Phosphorus	Bone growth, nutrient use	meat, fish, poultry, grains & eggs
Potassium	Cardiac and nervous function, kidney function, acid-base balance	meat, vegetables, fruit
Selenium	Antioxidant	seafood, meat and grains
Zinc	Digestion & metabolism, reproduction and healing	meats, eggs, whole grains