

## Fat-soluble Vitamins - A, D, E, K

Fat soluble means that these vitamins need fat in order to be absorbed, transported, and stored in the body.

When you eat foods with fat-soluble vitamins (A, D, E, K), they dissolve in the fats and oils you eat, not in water.

Your body absorbs them in the small intestine along with dietary fats.

Instead of leaving the body quickly, like water-soluble vitamins (such as vitamin C and B vitamins), fat-soluble vitamins are stored in the liver and fatty tissues for later use.

## Water-soluble Vitamins - Vitamin B complex and Vitamin C

Water-soluble vitamins and minerals aren't stored long-term—your body uses what it needs and flushes out the rest, so you need a variety every day.

That's why fresh fruits, veggies, whole grains, and hydration are so important!

Major minerals = needed in larger amounts (calcium, magnesium, potassium, etc.).

Trace minerals = needed in tiny amounts but still crucial (iron, zinc, iodine, etc.).

A rainbow of whole foods (fruits, veggies, nuts, beans, fish, grains) ensures you get them all.

## FAT-SOLUBLE VITAMINS CHART

VITAMIN	MAIN FUNCTIONS IN THE BODY	FOOD SOURCES
VITAMIN A	Supports vision (especially night vision) - Helps immune system fight infections - Keeps skin and tissues healthy	Carrots, sweet potatoes, spinach, kale, liver, dairy
VITAMIN D	Regulates calcium and phosphorus for strong bones & teeth - Supports immune function - Helps mood and brain	Sunlight, fatty fish (salmon, mackerel), egg yolks, fortified milk
VITAMIN E	Acts as an antioxidant, protecting cells from damage - Supports skin healing and health - Helps immune system	Nuts, seeds, sunflower oil, spinach, avocados
VITAMIN K	Helps blood clot properly (prevents excessive bleeding) - Supports bone health by helping bind calcium	Leafy greens (kale, spinach, broccoli), Brussels sprouts, cabbage

# WATER- SOLUABLE VITAMINS CHART

VITAMINS	MAIN FUNCTIONS	FOOD SOURCES
VITAMIN B1 (THIAMINE)	HELPS CONVERT FOOD INTO ENERGY; SUPPORTS NERVES & MUSCLES	WHOLE GRAINS, BEANS, NUTS, PORK
VITAMIN B2 (RIBOFLAVIN)	ENERGY PRODUCTION, HEALTHY SKIN & EYES	MILK, EGGS, ALMONDS, SPINACH
VITAMIN B3 (NIACIN)	SUPPORTS DIGESTION, SKIN, AND NERVES; ENERGY RELEASE	POULTRY, FISH, PEANUTS, MUSHROOMS
VITAMIN B5 (PANTOTHENIC ACID)	MAKES HORMONES & RED BLOOD CELLS; HELPS ENERGY METABOLISM	AVOCADOS, BROCCOLI, WHOLE GRAINS
VITAMIN B6 (PYRIDOXINE)	IMPORTANT FOR BRAIN DEVELOPMENT & MOOD REGULATION	BANANAS, POTATOES, CHICKEN, CHICKPEAS
VITAMIN B7 (BIOTIN)	SUPPORTS HAIR, SKIN, NAILS, AND METABOLISM	EGGS, NUTS, SEEDS, SWEET POTATOES
VITAMIN B9 (FOLATE/FOLIC ACID)	MAKES DNA & NEW CELLS; KEY FOR GROWTH	LEAFY GREENS, BEANS, LENTILS, ORANGES
VITAMIN B12 (COBALAMIN)	NERVE HEALTH, RED BLOOD CELL FORMATION, DNA SYNTHESIS	MEAT, FISH, DAIRY, FORTIFIED CEREALS
VITAMIN C (ASCORBIC ACID)	IMMUNE SUPPORT, COLLAGEN PRODUCTION, WOUND HEALING	CITRUS FRUITS, STRAWBERRIES, BELL PEPPERS

# WATER- SOLUABLE MINERALS CHART

MINERAL	MAIN FUNCTIONS	FOOD SOURCES
CALCIUM	BUILDS STRONG BONES & TEETH, HELPS BLOOD CLOT, MUSCLE CONTRACTION, NERVE SIGNALING	DAIRY, LEAFY GREENS, ALMONDS, FORTIFIED PLANT MILKS
PHOSPHORUS	WORKS WITH CALCIUM FOR BONES & TEETH, ENERGY METABOLISM (ATP)	MEAT, DAIRY, NUTS, BEANS
POTASSIUM	FLUID BALANCE, MUSCLE CONTRACTIONS, NERVE SIGNALS, HEART HEALTH	BANANAS, POTATOES, SPINACH, BEANS
SODIUM	MAINTAINS FLUID BALANCE, NERVE FUNCTION, MUSCLE CONTRACTIONS	SALT, SEAWEED, PICKLES
CHLORIDE	WORKS WITH SODIUM FOR FLUID BALANCE, MAKES STOMACH ACID (HCL)	SALT, SEAWEED, CELERY
MAGNESIUM	MUSCLE & NERVE FUNCTION, ENERGY PRODUCTION, BONE HEALTH	NUTS, SEEDS, WHOLE GRAINS, LEAFY GREENS
SULFUR	COMPONENT OF SOME AMINO ACIDS & PROTEINS, SUPPORTS DETOXIFICATION	GARLIC, ONIONS, EGGS, CRUCIFEROUS VEGGIES

## TRACE MINERALS CHART

VITAMINS	MAIN FUNCTIONS	FOOD SOURCES
IRON	MAKES HEMOGLOBIN FOR OXYGEN TRANSPORT, SUPPORTS ENERGY & IMMUNITY	RED MEAT, BEANS, SPINACH, LENTILS
ZINC	IMMUNE SYSTEM, WOUND HEALING, GROWTH, TASTE & SMELL	PUMPKIN SEEDS, SHELLFISH, BEANS
IODINE	MAKES THYROID HORMONES (METABOLISM, GROWTH)	SEAWEED, IODIZED SALT, DAIRY
SELENIUM	ANTIOXIDANT, THYROID FUNCTION, PROTECTS CELLS FROM DAMAGE	BRAZIL NUTS, FISH, WHOLE GRAINS
COPPER	HELPS FORM RED BLOOD CELLS, SUPPORTS IRON ABSORPTION, NERVOUS SYSTEM HEALTH	NUTS, SEEDS, SHELLFISH, WHOLE GRAINS
MANGANESE	ENZYME FUNCTION, BONE DEVELOPMENT, METABOLISM	NUTS, WHOLE GRAINS, LEAFY GREENS
FLUORIDE	STRENGTHENS TEETH & BONES	FLUORIDATED WATER, TEA, SEAFOOD
CHROMIUM	HELPS REGULATE BLOOD SUGAR (INSULIN FUNCTION)	BROCCOLI, WHOLE GRAINS, MEAT
MOLYBDENUM	HELPS ENZYMES BREAK DOWN TOXINS & AMINO ACIDS	LEGUMES, NUTS, GRAINS



**MOUTH** -very little absorption happens here, except some quick dissolving of things like certain medicines under the tongue. Digestion begins, but absorption of vitamins/minerals does not.

Stomach = prepares food and releases minerals.

Small intestine = main absorption station for almost all vitamins & minerals.

### **STOMACH -**

- The stomach's acidic environment (low pH) helps release minerals (like calcium, magnesium, and iron) from food.
- Vitamin B12 needs stomach acid and intrinsic factor (a protein made in the stomach) to later be absorbed in the small intestine.
- Overall, not much absorption occurs here—mainly preparation for the small intestine.

### **SMALL INTESTINE (THE MAIN SITE):**

- This is where most vitamin and mineral absorption happens!
  - Duodenum (first part): Absorbs iron, calcium, magnesium, and fat-soluble vitamins (A, D, E, K) with the help of bile from the liver/gallbladder.
  - Jejunum (middle part): Absorbs most water-soluble vitamins (like Vitamin C and B vitamins).
  - Ileum (last part): Absorbs Vitamin B12 and bile salts (which recycle fat digestion).

### **LARGE INTESTINE (COLON):**

- Absorbs water and electrolytes (sodium, potassium, chloride).
  - Houses gut bacteria that make Vitamin K and some B vitamins, which can also be absorbed here.

Large intestine = absorbs water, electrolytes, and vitamins made by gut bacteria.

