

Vitamins

Vitamin Name	Major Functions	Deficiency Effects	Toxicity Effects	Food Sources
A Retinol, retinal, Retinoic acid, (Beta carotene)	Vision, immunity, reproduction and growth	Blindness, infections, stunted growth	Bone fractures, liver damage, birth defects	Fortified milk, eggs, liver (dark green leafy and yellow/orange vegetables)
D Cholecalciferol	Bone growth and maintenance, absorption of calcium	Rickets, osteomalacia	Calcium imbalance	Sunlight, fortified milk, fatty fish, eggs, liver
E Tocopherol	Antioxidant, protects cell membranes	Red blood cell breakage, nerve damage	Interferes with blood-clotting drugs	Vegetable and seed/ nut oils, seeds and nuts, wheat germ and whole grains
K Phylloquinone	Blood clotting, bone health	Hemorrhage	None reported	Dark leafy greens, cabbage family, liver
B1 Thiamin	Energy metabolism	Beriberi, neurological problems	None reported	Whole and enriched grain products, leafy greens, pork
B2 Riboflavin	Energy metabolism	Inflammation of the mouth, skin	None reported	Whole and enriched grain products, milk products
B3 Niacin	Energy metabolism	Pellagra	Niacin flush, liver damage, impaired glucose tolerance	Whole and enriched grain products, protein-rich foods
B5 Pantothenic acid	Protein, fat and carbohydrate metabolism	Extremely rare	Mild intestinal distress	Almost all foods, especially avocados, broccoli, meats
B6 Pyridoxine, pyridoxal, pyridoxamine	Protein and fat metabolism	Scaly dermatitis, anemia, convulsions	Nerve degeneration	Protein-rich foods
B7 Biotin	Protein, fat and carbohydrate metabolism; beneficial to hair, skin and nails	Extremely rare	Unlikely	Egg yolk, liver, peanuts; also produced by gut bacteria
B9 Folate, folic acid, folacin	Helps make DNA for new cells, activates B12	Anemia, birth defects	Masks a B12 deficiency	Fortified grain products, vegetables, legumes
B12 Cobalamin	Helps make DNA for new cells, activates folate, protects nerve cells	Anemia, irreversible nerve damage and paralysis	None reported	Meat, fish, poultry, eggs, milk products
C Ascorbic acid	Antioxidant, collagen synthesis, immune function	Scurvy	Diarrhea	Fruits and vegetables

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