

Nutrient	RDA	Food Sources	Functions	S/S of deficit/excess	Digestion/Absorption
Minerals (builds tissues for special purposes, coenzyme factors in cell metabolism)					
Macrominerals (needed in amounts > 100 mg/day)					
Calcium	1000 mg	Milk, dairy products, canned fish, greens	Bone and tooth formation, blood clotting, nerve transmission, muscle contraction	D: tetany, osteoporosis E: renal calculi in susceptible people	D: Stomach A: small intestine
Sodium	1500 mg	Salt, processed foods	Major ion of extracellular fluid, fluid balance, acid – base balance	D: muscle cramps, cold and clammy skin E: edema, weight gain, high BP	D: Stomach A: small intestine
Phosphorous	700 mg	Milk and milk products, soft drinks, processed foods	Bone and tooth formation, acid-base balance, energy metabolism	D: anorexia, muscle weakness E: symptoms of hypocalcemic tetany	D: Stomach A: small intestine
Magnesium	310-420 mg	Green leafy vegetables, nuts, beans, grains	Bone and tooth formation, protein synthesis, carbohydrate metabolism	D: weakness muscle pain, poor heart function E: CNS depression, coma, hypotension	D: Stomach A: small intestine
Potassium	4700 mg	Whole grains, fruits leafy vegetables	Major ion of intracellular fluid, fluid balance, acid-base balance	D: muscle cramps, weakness, irregular Heart Beat E: irritability, anxiety, arrhythmia	D: Stomach A: small intestine
Micromineral (needed in amounts < 100 mg/day)					
Iron	8-18 mg	Liver, lean meats enriched and whole grain breads and cereals	O ₂ transport by hemoglobin	D: microcytic anemia, pallor, fatigue, weakness E: iron poisoning, GI symptoms, shock	D: Stomach A: small intestine
Iodine	150 mg	Iodized salt, seafood, food additives	Component of thyroid hormones	D: Goiter E: Acne-like lesions	D: Stomach A: small intestine

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Selenium	55 ug	Wheat, organ meats	antioxidant	D:None known E: loss of hair brittle nails, fatigue	D: Stomach A: small intestine
Zinc	8-11 mg	Oysters, liver, meats, dried peas beans, nuts	Tissue growth, sexual maturation, immune response	D: impaired growth,sexual maturation, immune system functioning E: anorexia, nausea, vomiting, diarrhea, muscle pain,lethargy	D: Stomach A: small intestine

Vitamins (Essential for certain functions, components of cell enzyme system and governs reactions that produce energy and synthesize important molecules)

Water-Soluble

(C) Ascorbic acid	75-90 mg + 35 for smokers	Only fruits and vegetables	Antioxidant; aids in iron absorption, collagen formation. Cements tissues together	D: Scurvy, hemorrhage, delayed wound healing E: not generally seen >2gram hot flashes, headache, nausea, diarrhea	D: Stomach A: small intestine
Biotin	30 ug	Liver, egg, yolks – wide spread in foods. Also produced in intestinal tract by bacteria	(B-coenzyme) Metabolizes carbohydrates, fat, proteins – needed for energy metabolism	Def: Rare. dry skin anorexia, fatigue	D: Stomach A: small intestine Colon - produces
Cobalamin (B12)	2.4	Meat products	(B-coenzyme) Needed for making new cells, Coenzyme formation of Heme of the hemoglobin. Important to nerve function	Def: pernicious anemia	D: Stomach A: small intestine

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Folacin (Folic Acid) Folate	400 ug	Leafy green veg, liver. Added to most refined foods.	(B-coenzyme) Part of an enzyme needed for making DNA, RNA new RBC (neural tube defect)	Def: macrocytic anemia, fatigue, weakness, pallor Neural tube defect	D: Stomach A: small intestine
Niacin B3	14-16 mg	Meat, grains, nuts, kidneys,	(B-coenzyme) Metabolizes carbohydrates, fat, proteins – needed for energy metabolism	D: Pellagra, dermatitis E: flushing, itch, nausea, vomiting, liver damage	D: Stomach A: small intestine
Pantothenic acid	5mg	Meat, grains, fish – widespread in foods	(B-coenzyme) Metabolizes carbohydrates, fat, proteins – needed for energy metabolism	-----	D: Stomach A: small intestine
Pyridoxine	1.3-1.7	Yeast, banana, cantaloupe, broccoli, spinach	(B-coenzyme) Metabolizes carbohydrates, fat, proteins – needed for energy metabolism	D: microcytic anemia, CNS problems E: Difficulty walking, numbness of feet and hands	D: Stomach A: small intestine
Riboflavin (B2)	1.1 – 1.3 mg	Milk products, green veg, grains, organ meats	(B-coenzyme) Metabolizes carbohydrates, fat, proteins – needed for energy metabolism	D: dermatitis, glossitis, photophobia	D: Stomach A: small intestine
Thiamine (B1)	1.1 – 1.2 mg	Whole-grains, legumes, liver	(B-coenzyme) Metabolizes carbohydrates, fat, proteins – needed for energy metabolism produces energy from glucose .	D: BERIBERI, fatigue, anorexia, indigestion, edema.	D: Stomach A: small intestine

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Fat-Soluble (stored in liver and adipose tissue)					
A Precursor: beta carotene	700-900 ug	Animal (retinol) Plant (beta carotene) leafy, dark green, dark orange fruits and veg.	Vision, healthy skin, mucous membranes, bone and tooth growth, immune system health Rods & Cones	D: Night blindness, keratin rough skin, bone growth cease E: TOXIC loss of hair, dry skin, bone pain, birth defects.	Route of absorption parallels that of fats – small intestine to lymphatic system to circulatory system
D	5 ug 200 units > age	Sunlight, fortified milk, fish liver oils	Calcium and phosphorus met. Stimulates calcium absorption	D: rickets, osteo-retarded bone growth and malformation E: TOXIC hypervitaminosis D.calcification of bones, renal calculi, nausea, headache	Route of absorption parallels that of fats – small intestine to lymphatic system to circulatory system
E	15 ug	Veg oils, wheat germ, whole grain	Antioxidant, protects vit A, heme synthesis Prevents oxidation of LDL protects arterial lining from inflammation leading to atherosclerosis. Slows changes in neural tissue.	D: Increased RBC hemolysis and macrocytic anemia in premature infants, disrupts making of myelin. Degeneration of rods and cones of retina E: nontoxic – Anticoagulant, may cause fatigue, diarrhea	Route of absorption parallels that of fats – small intestine to lymphatic system to circulatory system
K	90-125 ug	Dark green veg, Liver synthesized in intestines from gut bacteria	Synthesis of certain proteins necessary for blood clotting	D:Hemorrhagic disease of newborn, delayed blood clotting E: hemolytic anemia and liver damage with synthetic vit K	Colon - produced Route of absorption parallels that of fats – small intestine to lymphatic system to circulatory system