

VITAMINS

Vitamins are a group of compound, required in small quantity for controlling metabolism and body functioning.

Vitamins are two types- **fat soluble (A, D, E, K)** and **water soluble (B and C)**

(A) Fat soluble Vitamins:

Vitamins (Name)	Rich food source	Functions	Deficiency Diseases
A (Retinol)	Fish liver oils, dairy product, liver, most leafy vegetables and carrots contain carotene that can be converted into retinol	Needed for normal growth and induce differentiation of cells Regeneration of rhodopsin in rod cells of the eyes. Maintain of normal vision Essential for immune system.	Dry skin, night blindness(Nyctalopia)
D (Calciferol)	Fish oils, egg yolk and butter. It can be made by the action of sunlight on skin	Promotes absorption of calcium from intestine. Necessary for formation of normal bone	Rickets in children (soft bones that bend easily). Osteomalacia (painful bones) in adults
E (Tocopherol)	Vegetables oils, cereal products, whole grain, nuts, egg, butter etc	Formation of red blood cells, affect muscles and reproductive system. Maintain healthy cholesterol level	Mild anaemia and sterility.
K (Phylloquinone)	Fresh, dark green vegetables. Also made by gut bacteria	Formation of prothrombin (involved in blood clotting)	Delayed clotting time. May occur in new born babies before their gut bacteria become established

(B) Water soluble Vitamins

Vitamins	Rich food source	Function	Deficiency Diseases
B1 (Thiamine)	Pork, cereals, nuts, seeds, yeast, whole grain	Essential in converting glucose to energy Important to nerve function	Beriberi (weakness of limb muscles)
B2 (Riboflavin)	Milk, milk products, leafy vegetables, eggs	Involved in the formation of RBC, maintenance of body tissue particularly skin and eyes Essential for metabolizing carbohydrates, fats and lipids.	Cracked skin, blurred vision
B3 (Niacin)	Meat, whole grain, cereals, beans	Important for nervous system, digestive system and skin health	Pellagra (severe skin problem, Diarrhea, dementia)
B5 (Pantothenic Acid)	Whole grain cereals and legumes	Part for an enzyme needed for energy metabolism	Pellagra, Dermatitis, Diarrhea
B6 (Pyridoxine)	Meat, fish, egg, vegetables	Used to build RBC and maintain nerve tissue Necessary for immune system functioning	Skin problem, Nerve disorder
B9 (Folic Acid)	Leafy green vegetables, liver,	Necessary to build nucleic acid, which are essential for making new cells especially RBC	Anemia
B12 (Cyanocobalamin)	Liver, milk, fish, meat	Help build and maintain protective nerve sheath Needed for RNA and DNA synthesis.	Pernicious anemia, nerve disorder
C (Ascorbic acid)	Citrus fruits, tomatoes, leafy vegetables	Protect cellular function Important for immune system	Scurvy (bleeding of gums, teeth falling)

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