

<u>Mineral</u>	<u>Functions</u>	<u>Sources</u> Plant-Based*	<u>Signs of Deficiencies</u>	<u>Signs of Excessive Intake</u>
Macro Minerals:				
Calcium (Ca)	VIP for strong bones and teeth. Essential for vital metabolic fxns. Helps in blood clotting, muscle contraction, regulating blood pressure and enzyme production.	Kale, bok choy, turnip greens, collards, okra, snap peas, broccoli, watercress, white beans, figs, black-eyed peas, almonds, sesame seeds, oranges, seaweed.	Deficiency (or insufficient uptake) may lead to: Osteomalacia; Osteoporosis; Rickets; Tetany.	Formation of "stones" in the body, especially the Gall Bladder and the Kidneys.
Iron (Fe)	Important component of hemoglobin, allows for the essential transfer of oxygen between the tissues enabling red blood cells to carry oxygen throughout the human body.	Squash or pumpkin seeds, sesame seeds, sunflower seeds, cashews, pine nuts, hazelnuts, peanuts, almonds, dark green leafy vegetables (e.g. spinach, Swiss chard, raw kale, raw beet greens, etc.), whole grains, peas, soybeans, kidney beans, chick-peas, white beans, lima beans, black beans, pin-to beans, lentils, navy beans, tofu.	Deficiency may lead to: Anaemia; Increased susceptibility to infections.	Long-term excessive intake of iron can lead to: Haemochromatosis or Haemosiderosis (involving organ damage), and both of which are rare; Insufficient calcium and magnesium in the body (because these minerals compete with each other for absorption); Increased susceptibility to infectious diseases.
Magnesium (Mg)	Essential for healthy bones, works w/ sodium and phosphorus for healthy fxn of nerve and muscle tissue and for approx. 90 enzymes. Regulates calcium levels in the body, and helps to maintain bone structure.	Green leafy vegetables (e.g. raw spinach, Swiss chard, kale, etc.), dates, sesame, squash or pumpkin seeds, Brazil nuts, figs, almonds, cashews, beans, lentils, soybeans, whole grains, avocado, bananas, prunes, apricots, raisins.	Deficiency can occur gradually, leading to: Anxiety; Fatigue; Insomnia; Muscular problems; Nausea; Premenstrual problems. The most extreme cases of deficiency may be associated with arrhythmia.	Unusual.
Phosphorous (P)	Forms compounds for energy conversion (i.e. adenosine triphosphate — ATP). VIP for teeth and bone building and maintenance. Enables healthy muscle and nerve function and allows for energy release.	Pumpkin and squash seeds, sunflower, chia, sesame, and watermelon seeds, Brazil nuts, pine nuts, beans, soybeans, lentils, most fruits (bananas, peaches, figs, etc), raisins, dates, green leafy vegetables, carrots, sweet peppers.	Insufficient phosphorous may lead to: Anaemia; Demineralization of bones; Nerve disorders; Respiratory problems; Weakness; Weight Loss.	Excess phosphorous can interfere with the body's absorption of: calcium, iron, magnesium, and zinc.
Potassium (K)	Main ion of intracellular fluid. In combo with sodium, regulates fluid levels in the body, blood pressure, heartbeat and electrical potentials of the nervous system via nerve impulses.	Most fruit (e.g. apricots, kiwi, peaches, bananas, durian, etc.), most dark green leafy vegetables, beans, potatoes, acorn squash, avocados, mushrooms, figs, prunes, raisins, dates.	Insufficient potassium in the body may lead to: General muscle paralysis; Metabolic disturbances.	Excessive amounts in the body (whether due to intake or other causes) may lead to: Arrhythmia, and ultimately cardiac arrest ("heart attack"). Metabolic disturbances.
Sodium (Na)	Along with Potassium, regulates fluid controlling volume of extracellular fluid. and acid/alkali (pH) balance.	Beets, Swiss chard, spirulina, celery, tomatoes, artichokes, bok choy, kale, turnips, broccoli, passion fruit.	Insufficient sodium in the body may lead to: Low blood pressure; General muscle weakness/paralysis;	Excessive amounts in the body (whether due to intake or other causes) may lead to: Hyponatremia;

	Maintains electrical potentials of the nervous system to enable healthy nerve and muscle fxn.		Mild Fever; Respiratory problems.	De-hydration (especially in babies); Possible long-term effects may include hypertension.
Micro Minerals:				
Chromium (Cr)	Involved in the functioning of skeletal muscle.	Romaine lettuce, onions, potatoes, broccoli, nuts, tomatoes, Brewer's yeast, whole grains, green beans, garlic, oranges, grapes.	Deficiency may lead to: Confusion; Depression; Irritability; Weakness.	
Copper (Cu)	Essential for healthy function of red blood cells and brain. Found in blood plasma and red blood cells. Allows connective tissue synthesis. Vital component in many important enzymatic reactions.	Kiwi, avocados, guava, dates, mango, passion-fruit, lychee, dates, peas, raisins; lima beans, French beans, artichoke, kale, peas, parsnip, spirulina, pumpkin, Swiss chard, most nuts and beans contain trace amounts.	Insufficient copper has been associated with: changes in hair colour & texture, and hair loss; disturbances to the nervous system; bone diseases. Serious deficiency is rare but can lead to: Menke's syndrome.	
Manganese (Mn)	Antioxidant properties; Fertility; Formation of strong healthy bones, nerves, and muscles; Forms part of the enzyme copper-zinc superoxide dismutase (CuZn SOD) system;	Avocados, bananas, blackberries, currants, blueberries, durian, strawberries, dates, most beans and nuts, Brussels sprouts, French beans, kale, leeks, peas, okra, many whole grains.	Deficiencies are unusual but may lead to: Bone deformities; Rashes & skin conditions; Reduced hair growth; Retarded growth (in children).	Excessive intake has been associated with brain conditions such as symptoms similar to those resulting from Parkinson's disease.
Selenium (Se)	Antioxidant properties (prevents peroxidation of lipids in the cells); Essential component of the enzyme glutathione peroxidase; Contributes to efficiency of the immune system - very wide variety of protective functions within the body.	Spirulina, garlic, lima beans, French beans, peas, mushrooms, asparagus, Brussels sprouts, parsnips, dates, bananas, bread-fruit, guava, mango, watermelon, pomegranate, amaranth, barley, buckwheat, whole wheat, Brazil nuts.	Deficiency may lead to: Cardiomyopathy; Kaschin-Beck disease (affects the cartilage at joints).	Excessive intake can lead to selenium poisoning.
Sulphur (S)	Healing build-up of toxic substances in the body; Structural health of the body (sulphur is a part of many amino acids incl. cysteine and methionine); Healthy skin, nails & hair.	Beans, garlic, onion, cruciferous vegetables (e.g. broccoli, cabbage, cauliflower, etc.), asparagus, kale, leafy greens, turnips, flax seeds, sunflower seeds, soybeans, lentils, legumes.	Deficiency of sulphur is unusual.	
Zinc (Zn)	Necessary for more than 200 enzyme activity and functions, DNA and protein synthesis, strengthens immunity	Avocados, blackberries, pomegranate dates, asparagus, Brussels sprouts, corn, most beans, nuts and whole grains.	Deficiency is rare but may lead to: Lesions on the skin, oesophagus and cornea; Retarded growth (of	Excessive intake is not a common problem but especially if zinc supplements are taken over an extended period of time, can

	Maintains healthy skin, nails, eyes, growth and sexual development.		children); Susceptibility to infection.	reduce the absorption of Copper (so Copper supplements may also be appropriate).
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*Plant-based minerals are often superior to animal-based sources and without the ill effects of animal consumption which is correlated to high rates of chronic disease while the opposite is true for plant-based diets. A calorie adequate balanced diet, rich in a wide variety of fresh fruit and vegetables, is sufficient to meet a person's nutritional requirements. This table is not all-inclusive and is sourced from multiple resources. Supplements are only recommended short term (after blood work has confirmed a deficiency and in the rare circumstance that a dietary intervention has not proved fruitful). *Always consult with your physician or health care provider before taking any supplements or making any dietary changes.*

Disclaimer:

These statements have not been evaluated by the U.S. Food and Drug Administration. Information is intended for the purpose of education only and is not intended to diagnose, treat, cure or prevent any disease. Before beginning any supplemental or dietary regime, consult a licensed medical physician.