

VITAL MINERAL AND TRACE ELEMENT CHART

Nutrient	Food Sources	Functions	Deficiency Signs	Signs of Excess	Notes
Calcium	Milk, yoghurt, cheese, tinned sardines or pilchards, spinach, sesame seeds, soy beans, soy milk.	Structural mineral for bones and teeth. Sufficient, regular intake assists in optimising bone density. Assists with muscle contraction.	Increased risk for osteoporosis and colon cancer.	Calcium deposits in soft tissues, such as kidneys. Constipation.	Requirements increase with: <ul style="list-style-type: none"> <li>pregnancy and breastfeeding</li> <li>alcohol consumption</li> <li>taking antacids, antibiotics, anticonvulsants, anti-inflammatory drugs, corticosteroids, diuretics, laxatives, medication for gout and ulcers</li> </ul>
Magnesium	Green vegetables, lean red meat, wholegrain cereals, nuts, pulses.	Structural mineral in bones. Assists in muscle contraction. Energy and protein metabolism. Maintenance of nervous system and cardiovascular system.	Muscle spasms, convulsions. Muscle weakness. Appetite loss, nausea, vomiting. Increased risk for osteoporosis. Irregular heartbeat.	Diarrhoea	Requirements increase with: <ul style="list-style-type: none"> <li>pregnancy and breastfeeding</li> <li>alcohol consumption</li> <li>taking antibiotics, anti-inflammatory drugs, corticosteroids, diuretics, medication for diabetes, oral contraceptives, HRT, laxatives</li> </ul>
Phosphorus	Cheese, eggs, milk, yoghurt, meat, fish, poultry and other protein rich foods.	Important for healthy bones and teeth. Maintenance of pH (acid/base) balance. Important component of genetic material.	Muscle weakness.	Reduction in bone density.	Dietary inadequacy is unlikely with sufficient intake of protein- and calcium rich foods.
Iron	Red meat, molasses, spinach, liver, egg yolk, oysters, raisins, prunes.	Important component of haemoglobin in red blood cells, required for oxygen transfer in blood stream.	Anaemia with subsequent fatigue and shortness of breath. Learning difficulties in children. Increased susceptibility to infections.	Increased risk for heart disease and certain types of cancer. Aching joints. Constipation, nausea.	Non-haeme iron (plant sources) is better absorbed with the presence of Vitamin C. Requirements increase with: <ul style="list-style-type: none"> <li>pregnancy</li> <li>taking anti-inflammatory drugs, medication for ulcers</li> </ul>
Zinc	Oysters and other shellfish, pumpkin seeds, sunflower seeds, pulses, nuts, dairy products, wholegrain cereals.	Immune support nutrient. Assists in healing of wounds. Maintenance of healthy hair, skin and nails. Supports eye health. Bone health nutrient.	Increased susceptibility to infections. Delayed wound healing, skin lesions. Hair loss, decrease in taste sensation.	Decreased Copper absorption with Zinc intakes exceeding 150 mg per day. Gastro-intestinal irritations, nausea and vomiting.	Requirements increase with: <ul style="list-style-type: none"> <li>pregnancy and breastfeeding</li> <li>alcohol consumption</li> <li>taking antibiotics, diuretics, oral contraceptives, HRT, painkillers, medication for hypertension and ulcers</li> </ul>
Fluoride	Water, tea, coffee, rice, spinach, soybeans, onions, lettuce.	Maintenance of healthy teeth and bones.	Increased risk of dental caries.	Discolouration of teeth. Flaking and decay of teeth.	Fluoride is added to drinking water in areas known to have low soil fluoride content.
Iodine	Kelp, Iodised salt, spirulina, fish & seafood, most vegetables.	Important component of thyroid hormones which control metabolism.	Concentration problems in children. Thyroid problems such as goiter. Cretinism among children.	Tyroid problems.	Requirements increase with: <ul style="list-style-type: none"> <li>pregnancy and breastfeeding</li> </ul>
Selenium	Brazil nuts, other nuts, seeds, wholegrain cereals, onions, lean meats.	Antioxidant nutrient, protecting body cells against free radical damage. Supports healthy immune function.	Suppressed immune function. Joint pain, swelling and stiffness. Increased risk for cancer.	Changes in skin and nails. Tooth decay. Nausea and gastro-intestinal upsets.	Requirements increase with: <ul style="list-style-type: none"> <li>pregnancy and breastfeeding</li> <li>alcohol consumption</li> <li>taking anti-inflammatory drugs</li> </ul>
Chromium	Brewer's yeast, broccoli, turkey, pulses, wholegrain cereals, seafood, potatoes, molasses.	Supports insulin action, therefore important nutrient for glucose metabolism and blood glucose control.	Insulin resistance. Blood lipid abnormalities: increased cholesterol and triglyceride levels. Impaired growth.	Skin lesions	Requirements increase with: <ul style="list-style-type: none"> <li>pregnancy and breastfeeding</li> </ul>
Manganese	Spinach, beet greens, blueberries, wholegrain cereals, nuts, tea, pulses, organ meats.	Maintenance of healthy bone tissue. Enzyme activator. Co-factor in energy metabolism.	None documented.	None documented.	Manganese is found in important organs such as the pancreas, liver, pituitary gland and intestinal tissues.
Copper	Mushrooms, liver, kidneys, shellfish, cherries, nuts, wholegrain cereals.	Component of DNA & RNA (genetic material), as well as important enzymes controlling various metabolic processes in the body.	Anaemia. Demineralisation of bone tissue. De-pigmentation of skin and hair.	Liver cirrhosis. Abnormalities in red blood cells.	Regular high intakes of Zinc (more than 150 mg/day) and Vitamin C (more than 1500 mg/day) may impair copper absorption and status.
Molybdenum	Pulses, dark green leafy vegetables, organ meats.	Essential component of important enzymes that regulate various biochemical processes.	Mental abnormalities.	Gout type symptoms.	Little information is available about this micronutrient, especially relating to deficient and excessive intakes, which indicates need for further investigations.