

# VITAMINS AND MINERALS

## Functions and Rich Food Sources

NUTRIENT	FUNCTION	FOOD SOURCES	Absorption Inhibitors	Absorption Helpers	Deficiency signs
<b>VITAMINS:</b> <b>Vitamin A</b>	Necessary for good eye health; for healthy skin; an antioxidant; boosts the immune system; protects against cancer: protects against infection especially along mucus membranes such as the nose, throat, lungs bladder and vagina.	RETINOL - Calves, veal & lamb's liver, full fat dairy produce, egg yolk, oily fish, BETA CAROTENE - mangoes, tomatoes, green leafy vegetables, carrots, watercress, cabbage, sweet potatoes, apricots, papaya	Some prescription drugs for high cholesterol and antacids. Low blood levels of zinc	Best absorbed together with a little oil or fat in the diet	Poor night vision frequent colds, lung infections, thrush, cystitis. Mouth and stomach ulcers. Poor skin condition, liver spots, dry itchy eyes.
<b>Vitamin B1 (Thiamine)</b>	To produce energy; support the nervous system; for muscle, heart and mental function; enables stress response, improves memory; needed to convert glucose into energy	Whole grains, yeast extract, peas, oranges, boiled potatoes, egg yolk, oatmeal, legumes, liver, lamb, watercress, courgette, asparagus, mushrooms, cauliflower	High intake of alcohol. Long term use of antacids Sulphur dioxide (used in the drying of fruit). Caffeic acid in tea and coffee	Vitamin C Other B Vitamins	Frequent stomach pains, indigestion, constipation, depression, confusion, irritability, insomnia.
<b>Vitamin B2 (Riboflavin)</b>	For growth; healthy skin and nails; energy production; metabolism of fats, protein and carbohydrates; supports repair of mucus membranes	Green leafy vegetables, fish, yoghurt, cottage cheese, milk, liver, mackerel, mushrooms, watercress, cabbage, asparagus, broccoli, brown rice	High intakes of alcohol and antidepressant drugs. Chemotherapy Anti-malarial drugs	Other B vitamins and Selenium	Cracks or sores in the corners of the mouth, bloodshot eyes, sensitivity to light, sore tongue, poor skin and hair, fatigue, depression, insomnia
<b>Vitamin B3 (Niacin)</b>	Hormone synthesis, nervous system & brain function; for metabolism and energy; helps to make serotonin, protects against inflammation; helps regulate blood glucose	Lean meat, wheat germ, yeast extract, bean sprouts, nuts – especially peanuts, green vegetables, chicken, egg yolks, tuna	Coffee, contraceptive pill and antibiotics for bacterial infections	Other B Vitamins, Chromium & Tryptophan	Poor mental health including dementia, depression, anxiety, irritability, mood swings. Elevated blood pressure, cholesterol, blood triglycerides. Poor skin hair and nails, Inflammatory conditions e.g. arthritis
<b>Vitamin B5 (Pantothenic acid)</b>	Needed for energy production; to make antibodies for wound healing; for healthy hair, skin & nails; during times of stress it supports the adrenals to produce their steroid or stress hormones	Wholegrains, wheat germ, nuts, green vegetables, chicken, egg yolks, meat, avocado, sesame seeds, mushrooms, watercress	Stress High amounts of alcohol, tea, coffee	Folic acid, Biotin and other B Vitamins	Poor ability to cope with stress headaches, fatigue, restless or itchy legs, burning feet, tingling in arms and legs
<b>Vitamin B6 (Pyridoxine)</b>	To produce immune cells and red blood cells; to be able to use protein; for stomach acid production; Vitamin B12 absorption, improves low mood and energy; important for oestrogen metabolism; supports blood sugar level balance; supports reduction of homocysteine levels	Highest: tuna, spinach, cabbage, bok choy, bell peppers, turnip greens, cauliflower. Also turkey, beef, chicken, salmon, sweet potato, potatoes, banana, Winter squash, broccoli, Brussels sprouts, collard greens, kale, carrots, Swiss chard, asparagus, mustard greens.	Penicillin Alcohol Contraceptive pill Smoking	Other B Vitamins, zinc & Magnesium	Depression, mental confusion PMS, fertility problems, mood swings, irritability, tingling hands and feet, poor dream recall

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<b>Vitamin B12</b>	For growth; concentration; healthy nervous system; formation of red blood cells; carbohydrate, fat and protein metabolism; insulation of nerve fibres; anaemia; supports reduction of homocysteine levels	Highest: sardines, salmon, tuna, cod, lamb, scallops, shrimp. Also, beef, yogurt, eggs, turkey, chicken, cheese, crimini mushrooms	The drug Metformin Oral contraceptive pill Excessive alcohol Some drugs treating high cholesterol.	Calcium & other B Vitamins. Vitamins A, C & E Adequate levels of stomach acid are essential for absorption	Pernicious anaemia, dizziness, pallor, numbness, tingling, sore tongue, nerve degeneration.
<b>Folic Acid (Folate)</b>	For using proteins and carbohydrates; immune cell formation; helps prevent anaemia; protects against parasites and food poisoning; supports healthy nervous system by supporting the formation of brain chemicals that control sleep, pain & regulate mood; supports reduction of homocysteine levels	Highest: Lentils, asparagus, spinach, broccoli, beetroot, Romaine lettuce, bok choy cauliflower, parsley. Also, pinto beans, garbanzo beans (chickpeas), black beans, navy beans, kidney beans, papaya, Brussels sprouts, green peas, celery, cabbage, courgettes, strawberries, tomatoes.	Regular large intakes of alcohol Oral contraceptive pill and Metformin	Other B Vitamins, especially B12	Anaemia, fatigue, breathlessness, depression, irritability, confusion, insomnia
<b>Biotin</b>	For metabolism of fats, proteins and carbohydrates into energy; maintaining healthy skin & hair; can support diabetes and blood sugar regulation; helps convert folic acid to its active form	Brown rice, nuts, fruit, egg yolk, liver, pig's kidney, cottage cheese, peanut butter, walnuts, almonds, lettuce, peas, watermelon, cherries	Regular intakes of alcohol Raw egg white	Other B vitamins Magnesium Manganese Supplements are best taken with meals	Depression, fatigue, poor appetite, hair loss, premature greying hair, dry skin
<b>Choline</b>	For memory; aids detoxification; prevents cholesterol build up; supports mood & brain development in children	Green leafy vegetables, egg yolk, wheat germ, liver, lecithin, avocado, lecithin granules	Regular intake of alcohol	Lecithin supplements can be soya or sunflower based or can be taken as choline bitartrate	
<b>Vitamin C</b>	Powerful antioxidant; boosts immunity; anti viral; anti bacterial; vital for skin, bone, cartilage and tissue formation; essential for wound healing; reduces inflammation in some allergies; restores & regenerates vitamin E; assists in synthesis of stress hormones; enhances absorption of iron when eaten at the same time; supports serotonin production.	Most fruit and vegetables including citrus fruit, kiwi, potato skins, green leafy vegetables, sweet peppers, broccoli, papaya, strawberries, watercress, spring greens	Smoking Contraceptive pill Aspirin & corticosteroid drugs	Bioflavonoids Calcium Magnesium	Frequent colds and infections, hair and nail tone, poor wound healing, bleeding gums
<b>Vitamin D (Cholecalciferol)</b>	Main role is in metabolism of calcium. It increases intestinal absorption of calcium & phosphorus and increases the calcium deposition in bones; Immune and mucus membrane support; support immunity; may help reduce anxiety	Dairy products, egg yolk, oily fish, cod liver oil, margarine, cheddar cheese, cottage cheese, portabella mushrooms, the body makes vitamin D in response to skin that is exposed to sunlight (without sunscreen!)	Mineral oil based laxatives Cholestyramine used in the treatment of high cholesterol.	Fats and oils	Poor bone strength and formation (particularly in children), tooth decay, muscle weakness, muscle spasms

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<b>Vitamin E (Tocopherol)</b>	Antioxidant; protects all mucus membranes; prevents and supports scarring; helps prevent blood clotting. Supports immune system & circulatory system; protects against premature aging; supports reproductive health	Whole grains, olive oil, safflower oil, almonds, nuts and seeds, dark green vegetables, wheat germ, eggs, butter, avocado, pine nuts, spinach, oily fish, sweet potato	Cholestyramine used in the treatment of high cholesterol. Excessive intake of iron, manganese & copper	Selenium Vitamin C	High blood pressure, atherosclerosis, thrombosis, poor skin tone, fertility problems
<b>Vitamin K (Phylloquinone)</b>	May improve bone strength in osteoporosis; supports where there has been heavy blood loss; supports formation of prothrombin to assist blood clotting.	Broccoli, Brussels sprouts, cabbage, alfalfa, egg yolk, kelp, chard, watercress, sea greens, cauliflower, oily fish, potatoes	Cholestyramine used in the treatment of high cholesterol. Antibiotics	Probiotic foods such as live yoghurt	Poor wound healing, poor blood clotting, nose bleeds, easy bruising
<b>Coenzyme Q10 (CoQ10). Active form is called ubiquinol</b>	A natural substance found in the body and certain foods that helps fight oxidative stress and prevent tissue damage. Required by every cell in the body. Protects cells from effects of ageing. Mitochondria need it to make energy (ATP). Defends cells from free radicals. Declines as we age.	Pork heart, chicken liver, beef heart, pork shoulder, beef liver, Grass-fed beef, Herring, Free-range chicken, Rainbow trout, Sesame seeds, Pistachio nuts, Broccoli, Cauliflower, Oranges, Strawberries, Cage-free eggs, Sardines, Mackerel		Increases all other nutrients including Vitamin C and E	Deficiency associated with declining cognition, diabetes, cancer, fibromyalgia, heart disease, muscle conditions (Fibromyalgia Parkinson's).
<b>MINERALS: Calcium</b>	For healthy bones and teeth; needed for cell function; helps blood clotting; correct heart function. Helps improve pre-menstrual syndrome; helps to reduce inflammation; protects connective tissue.	Dairy produce, soya bean and other dried beans, green leafy vegetables, sesame seeds, sardines, herring, salmon, white bait, barley grass, seaweed, brewer's yeast, blackstrap molasses, nuts and seeds, prunes, pumpkin seeds. Tofu.	Phytates in spinach, dried pulses, nuts etc. Oxalates in rhubarb Phosphorous in fizzy drinks	Vitamin D and essential fatty acids	Poor bone density, tooth decay, muscle cramps or spasms, constipation, diarrhoea, twitches
<b>Magnesium</b>	For energy production; to support body during times of stress; for nerve and muscle function, it stimulates the muscles to relax & works with calcium to activate nerve transmission; for calcium metabolism, helps improve pre-menstrual syndrome; supports adrenals with production of stress hormones; relieves pain & cramping of muscles	Highest: spinach, Swiss chard, beetroot greens, pumpkin seeds, courgettes. Also, sesame seeds, black beans, quinoa, cashews, sunflower seeds, navy beans, buckwheat (a grain, not actually wheat), pinto beans, brown rice, lima beans, millet, kidney beans, oats, almonds	Long term use of diuretics Oxalates in rhubarb Large amounts of calcium  STRESS – not only depletes the body, but reduces the uptake and increases the amount of magnesium required!	Protein foods such as meat, chicken, fish and eggs Minerals phosphorus and zinc Vitamins B1, B6 Vitamin C & Vitamin D Supplemental magnesium best taken in the evening	Muscle cramps, inability to cope with stress, heart palpitations, constipation, insomnia, anxiety, poor bone density, tooth decay, high blood pressure

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<b>Boron</b>	Supports menopausal symptoms; supports storing of calcium in bones; reduces inflammation; supports connective tissue; metabolism of carbohydrate & fat	Almonds, raisins, honey, lentils, olives, raw cashew nuts, dates, red kidney beans, dried apricots, avocado, walnuts, peanut butter	Low daily intake of fruit and vegetables can lead to a deficiency.	Works synergistically with calcium and magnesium. Helps to balance vitamin D3 levels.	Poor bone density, difficulty with weight loss
<b>Chromium</b>	Enables body to balance blood sugar levels it is a component of "glucose tolerance factor"; enables protein to be delivered around the body to where it is needed, Help's reduce food cravings. May help to lower cholesterol.	Chicken, oysters, brown rice, eggs, bananas, cabbages, oranges, green beans, brewer's yeast, black eye beans, peas, brazil nuts, green peppers, rye bread, molasses, nuts, asparagus	Additives and pesticides High sugar diets over a long period of time.	Niacin Amino Acids, Glutamic acid, Glycine and Cysteine.	Irritability, sugar cravings, mood swings, thirst, sweating, tingling legs and arms, dizziness, energy dips
<b>Iron</b>	Helps the body metabolise B vitamins; for energy production; haemoglobin formation (found in red blood cells that picks up and delivers oxygen to every cell in the body); restores skin tone; improves concentration; helps improve restless legs; can support sleep	Red meat, green leafy vegetables, liver, dried peaches, egg yolk, beetroot, nuts, figs, cherries, dried apricots, tuna in oil, sesame & pumpkin seeds, parsley, raisins, dates, spring greens, sesame seeds. Black strap molasses	Tannin in tea and red wine. Phytates in bran / spinach. Excess intakes of calcium in supplemental form or in meal very high in dairy produce (especially affects children)	Fructose and vitamin C aid absorption. Adequate levels of stomach acid are essential for absorption	Anaemia, pallor, low energy, breathlessness
<b>Copper</b>	May be of support for osteoporosis, heart disease, arthritis and infections & fatigue; said to protect against changes in hair colour through ageing	Sesame seeds, cashews, soya beans, Shitake mushrooms, beetroot greens, turnip greens, Crimini mushrooms, spinach, asparagus, Swiss chard, kale. Also, sunflower seeds, garbanzo beans, lentils, walnuts, lima beans, pumpkin seeds, tofu, peanuts, kidney beans, olives, sweet potato, calves liver, oysters, crab, lobster, peanuts, prunes	Large intakes of zinc Long term use of acid indigestion remedies	Generally well absorbed. Vegetarian diets can often be higher in copper	
<b>Molybdenum</b>	Helps to detoxify sulphites; can support asthma; can support allergies; helps body to utilise iron; important for heavy metal & petrochemical detoxification	Liver, pork, yeast, lentils, beans, tomatoes, spinach, green cabbage, wholemeal bread, whole wheat pasta, brown rice, pumpkin seeds.	Excess silicon Large intakes of protein over a long period	Generally well absorbed	Tooth decay, joint pains, increased susceptibility to the effects of pollution
<b>Manganese</b>	For bone structure; production of energy; digestion; for the thyroid gland, helps control blood sugar levels, may help in wound healing; supports production of synovial fluid in joints spaces.	Green leafy vegetables, nuts, peas, wholegrains, desiccated coconut, canned chick peas, boiled brown rice, watercress, pineapple, okra, endive, blackberries, raspberries, Quorn, macadamia nuts	Large intakes of calcium and phosphorus Large intakes of alcohol	Vitamin C and Zinc	Poor blood sugar control, reduced fertility, joint pains
<b>Zinc</b>	For reproductive development; growth; enzyme production and function; immune system function; insulin storage and activity, so helps balance	Highest: Beef, spinach, asparagus, shitake mushrooms, crimini mushrooms. Also lamb, sesame seeds, pumpkin seeds, chickpeas (hummous),	Phytates, fibre and too much phosphorus. Low stomach acid – (people taking proton pump inhibitors)	Adequate levels of protein help absorption Adequate levels of stomach acid	Frequent infections, poor skin tone (acne), irritability, mood swings, energy dips, fertility

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	blood sugar levels; supports skin tone, growth & repair; hormone production.	lentils, cashews, quinoa, turkey, shrimp, tofu, scallops, green peas, oats, goat's yogurt, beetroot greens, courgette, broccoli, Swiss chard, Brussels sprouts		are essential for absorption	problems, PMS, poor wound healing
<b>Phosphorus</b>	Vital component of every body cell & tissue; Can support bone density; can support insulin dependent diabetes; helps to active B-vitamins	Cheese, liver, prawns, crab, mussels, lobster, smoked salmon, turkey, plain yoghurt, watercress, sesame seeds, almonds, brazil & cashew nuts	Large amounts of calcium	Vitamin D increases absorption	Weakness, joint stiffness, fragile bones
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<b>Sulphur</b>	Can support detoxification (supports liver); joint health; healthy hair, skin, nails & bones; anti-inflammatory action	Eggs, garlic, cabbage, onions, leeks, lentils, pork, beef, fish, chicken, turkey, black eye beans, peas	Excess levels of copper	Vitamin E	Poor hair, skin, nail health
<b>Selenium</b>	Antioxidant; stimulates immune function; supports heavy metal detoxification; helps acne; supports heart and thyroid health	Tuna, liver, chicken, barley, button and shitake mushrooms, wheat germ, kidney beans, tomatoes, broccoli, brazil nuts, cashew nuts, walnuts, molasses	Highly processed diets are generally low in selenium	Vitamins A, C, E help absorption.	Increased risk of cancer poor immune function, signs of premature ageing
<b>Iodine</b>	Key component of thyroid hormones. Supports skin and digestive health, muscles and joints, mood, memory and energy balance. Research shows it supports the symptoms of fibromyalgia.	Shellfish, wild caught fish and seafood. Kelp and other seaweeds. Dairy products, eggs, corn, prunes, cheese, peas, bananas, cranberries, strawberries, iodized salt	High intakes through long term supplementation can be suppressive to the body Fluoride and chloride intake compete for absorption.	Regular daily intake necessary	Weight gain, constipation, low energy, sensitivity to cold, cold hands and feet, dry skin
<b>Inositol</b>	Supports the membrane of each cell, supports blood sugar levels. Supports anxiety, binge eating and supports mood and PMS. Can help to support blood sugar levels.	Cantaloupe melon, oranges, lecithin granules, desiccated liver, brown rice, molasses, green leafy vegetables, soya flour	No long term toxicity has been noted	In supplement form, best taken after a meal with other B vitamins. Myo -inositol is the main form of supplementation.	
<b>Alpha Lipoic acid (ALA)</b>	Is a potent antioxidant, can support eye health, blood sugar levels and help prevent diabetes. Supports metabolism and liver function, helps to balance cholesterol levels.	Organ meats, yeast, broccoli, spinach, tomatoes, peas, Brussels sprouts, avocado.	No long term toxicity has been noted.	Helps to restore the levels of Vitamin E and C. It is both water and fat soluble.	
<b>Potassium</b>	Necessary for the normal functioning of cells, nerves, and muscles, it is one of the main blood minerals called "electrolytes" (the others are sodium and chloride), which means it carries a tiny electrical charge (potential). It also supports water balance and alkalisng of the system	Beetroot greens, Swiss chard, spinach, bok choy also beetroot, Brussels sprouts, broccoli, cantaloupe, tomatoes, asparagus, cabbage, carrots, fennel, courgettes, crimini mushrooms, kale, celery, Romaine lettuce, bell peppers, lima beans, sweet	Potassium can be lost through the skin on a hot day or after a workout or after a bout of diarrhoea and vomiting	Food rich in magnesium enhance absorption	Pins and needles, muscle weakness, low blood pressure, thirst, cellulite, palpitations, constipation

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		potato, potatoes, soyabeans, pinto beans			
<b>Trimethylglycine</b> <b>TMG</b>	A vitamin-like substance, TMG supports energy levels, is an antioxidant and is anti-inflammatory It also supports the Methyl conversion process (along with B12, B6 and folic acid) in the body and the detoxification process of the liver. Also helps to support mood and lower homocysteine levels and helps the body to process fats & support healthy blood sugar levels	Wheat & wheat bran, quinoa, beetroot, spinach, broccoli, rye, bulgar wheat, sweet potato, turkey, beef, shellfish	Cooking destroys the TMG in vegetables, so these are best raw.	Combining foods rich in TNG at one meal	
<b>Bioflavonols</b>	These special plant chemicals act as powerful antioxidants, neutralising free radicals and harmful toxins, protecting cells from damage. They strengthen capillary walls and prevent blood from becoming too sticky, making them great for cardiovascular health. Bioflavonols also help vitamin C to work efficiently and effectively within the body.	Citrus fruits purple and red berries and highly coloured vegetables			Frequent infections such as colds and flu, thread veins or varicose veins and generally poor immune system
<b>Phyto-oestrogens</b>	These plant chemicals have a similar structure to oestrogen. It is this structural similarity that allows phyto-oestrogens to fit into cellular receptor sites and exert an oestrogen effect on body cells. Phyto-oestrogens are considered to be oestrogen modulators. When natural oestrogens are too low, they sit in receptor sites and top up the oestrogen activity needed. However, when exposure to powerful synthetic oestrogens has been too high, phyto-oestrogens in the receptor sites block the activity of synthetic oestrogens and dampen down the natural oestrogenic activity within the body.	Fennel, soya milk, tofu, tempeh, tamari, flax seeds (linseed tea), oats, celery, alfalfa, rhubarb.			PMS, endometriosis, polycystic ovaries, menopause, osteoporosis, prostate cancer
<b>Plant Sterols</b>	Plant sterols support adrenal function, helping to combat the effects of prolonged exposure to stress, support immune function protect the	Nuts, seeds, pulses (legumes) and mushrooms			Ongoing immune problems, frequent infections, asthma, arthritis, eczema

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	cardiovascular system, calm inflammation				
<b>Quercetin</b>	Quercetin is a flavanoid found in a variety of plants. It improves insulin resistance and additionally it improves adiponectin receptors – a hormone crucial for burning fat and maintaining metabolic health. Quercetin makes adiponectin work better and helps with weight loss and maintenance. It also decreases testosterone and improves ovarian health and function. Helps to lower blood pressure. May inhibit viral infections.	In order of content: Capers, elderberry, dock, radish, rocket, dill, cilantro, fennel leaves, juniper berries, oregano, yellow and red onions carob, radicchio, red flat leaf lettuce, spring onions, watercress, hawthorn leaves, asparagus, kale, okra, bee pollen, cocoa powder, apple skins, peppers, chilli peppers, cranberries, plums with skin, Romaine lettuce, tarragon, mustard greens, rocket, red kidney beans, chicory leaves, figs, turmeric			
<b>Goitrogens</b>	Certain foods, known as 'Goitrogens' can reduce thyroid activity due to their active substance 'goitrine' interfering with iodine absorption.	Broccoli, Brussels sprouts cabbage, cauliflower, sauerkraut, soya products, peanuts, pine nuts, millet swede, turnips, kohlrabi radishes, African cassava kale, rape, mustard, horseradish, maize, almonds, walnuts, tobacco	Goitrogens are largely destroyed by cooking (the reason why some people feel very tired and sluggish when they follow a raw food diet)		Too many raw foods with goitrogens can make one feel tired and sluggish
<b>Histamine</b>	Certain foods contain histamine or have a histamine-raising effect  Each person is different in their histamine tolerance and foods	Histamines in food typically increase with age and fermentation. Fermented foods (vinegars, 24-hour yogurt, wine/beer/cider, sauerkraut, kombucha, kimchi), aged meats (bacon, sausage, ham, canned meats/fish, smoked salmon, bone broths) as well as tomatoes, spinach, eggplant, spicy foods, and chocolate are typically the most problematic for those with high histamine.	When blood sugar falls, histamine rises.  When hydration falls low, histamine rises  When the liver is sluggish, histamine is not cleared and can remain in circulation  Certain gut bacteria produce histamine (which is why it is high in fermented foods)		Signs of high histamine can include hot flashes, dizziness, memory problems, Bronchoconstriction, mucous production, nasal congestion, sneezing, rhinitis, Abdominal pain, oedema (swelling), flatulence, diarrhoea, inflammation, Itching, urticarial, hives, Itchy skin, eyes, ears, and nose, eczema. Swelling of the soft tissues on the face, mouth, or throat (often described as "throat tightening"). Nasal congestion. Red, watery eyes. Low blood pressure, chest pain, rapid heart rate, feelings of panic or extreme anxiety  Fatigue, irritability, or confusion. Joint and muscle pain

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