

# MINERALS



# MINERALS, THEIR BENEFITS AND SOURCES

Mineral in RDI	Benefits	Deficiency	Plant sources	Animal sources	Example for RDI	Additional information
<b>Zinc (Zn)</b>  RDI 7-10 mg  7 mg female 10 mg male	It plays a role in metabolism of proteins, carbohydrates, fats, health of hair, skin, bones, nails, formation of new white blood cells (leucocytes), therefore lowers inflammatory responses, protects against oxidative stress.	The consequences of low zinc intake may show as weakness, weakened immune system (hair loss, dry skin, digestive problems), dermatitis.	The best plant sources of the mineral zinc are legumes, seeds, nuts, cocoa, cauliflower, beans, spinach, garlic, chicory, avocado, brewer's yeast.	The best animal sources of the mineral zinc are beef, fish, shellfish, squid and other seafood, eggs, yoghurt.	60 g oysters  360 g chickpeas	Pregnant and breastfeeding women should increase their intake to 12 mg. It is very useful in the treatment of colds in combination with vitamin C. It plays an important role in the metabolism of acids and bases, vitamin A.
<b>Magnesium (Mg)</b>  RDI 375 mg	It plays a role in energy release, muscle function, psychological health, nervous system, metabolism, protein synthesis, helps maintain healthy bones and teeth, and reduces inflammation.	Fatigue and heart problems and heart rhythm disturbances, muscle cramps, anxiety, depression, loss of appetite, insomnia, headaches.	Wholegrain grains, legumes, nuts, seeds, green vegetables, spinach, potatoes, mineral water, coffee, bananas, oranges, dark chocolate.	Milk and milk products, fish and meat (poultry).	170 g dark chocolate  150 - 200 g nuts	30-60% of the magnesium consumed is absorbed into the body.  The recommended level should not be exceeded.
<b>Potassium (K)</b>  RDI 2000-4000 mg	Cardiovascular function, muscle contraction, normal electrolyte levels, has a positive effect on diabetes, metabolic syndrome and high blood pressure, and osteoporosis.	Indigestion, muscle cramps, mood changes, sometimes breathing and heart rhythm problems, nausea.	Bananas, apples, citrus juices, green leafy vegetables, avocados, dried fruit, garlic, tomatoes, beans, mushrooms, artichokes, courgettes, potatoes.	Chicken, fish (salmon, halibut, tuna), dairy products.	350 g spinach  350 g potatoes	Deficiencies can occur because of severe diarrhea accompanied by cramps and nausea, excessive coffee and alcohol consumption. People with kidney problems should consult a doctor about their potassium intake.
<b>Manganese (Mn)</b>  RDI 2 mg	It protects cells from oxidative stress, maintains healthy bones and helps maintain normal connective tissue.	Low intake of manganese may result in experiencing fatigue, dizziness, poor hair and nail quality.	Wholegrain foods, legumes, nuts and seeds, spinach, kale, eggplant, tomatoes, strawberries, blueberries, bananas.	Seafood, liver from beef and lamb, low levels of Mn are in eggs and dairy foods.	30 g hazelnuts  200 g beans	It can also be introduced into the body by drinking green tea or coffee.

Mineral in RDI	Benefits	Deficiency	Plant sources	Animal sources	Example for RDI	Additional information
<b>Calcium (Ca)</b>  RDI 800 mg  Children 1200 mg	It is beneficial for teeth and muscles, bone mineralization, cell signaling, proper muscle contraction and blood clotting, regulates heartbeat, neutralizes acids.	Muscle cramps, low bone density, osteoporosis, growth retardation and fractures, brittle nails, increased blood pressure, risk of colon problems, depression and mood changes.	Brassicas (cabbage, broccoli, cauliflower, kale), turnips, almonds, tahini (sesame butter), dried fruit, grains, legumes, chard, spinach and fortified foods, tofu.	Milk and dairy products, cheeses, it can also be found in canned fish with bones (sardines, salmon, mackerel).	250 g liquid yoghurt  100 g edam cheese	Absorption of calcium is increased by foods with vitamin D, phosphorus. Absorption is reduced by phytic acid (in spinach, broccoli, rhubarb) and oxalic acid (in spinach and chard), salt, alcohol, coffee, age.
<b>Iron (Fe)</b>  RDI 14 mg  Vegetarians 1.8x more	It plays a role in the transport of oxygen and electrolytes throughout the body, DNA synthesis and respiration, as well as in the metabolism of amino acids and fats, helping to reduce fatigue and tiredness. It boosts energy levels and enhances brain cognitive function. Iron supports the health of our skin, hair and nails.	Anemia, reduced physical performance, immune system dysfunction, fatigue, dizziness, thermoregulation disorder, may interfere with cognitive and motor development (in children of 12-18 months of age).	Wholegrain bread, bakery products, legumes, grains, dark green vegetables, nuts, mushrooms, seeds, dried fruit (dates, apricots, plums), currants, seaweed, sprouts, real cocoa, dark chocolate, parsley.	Heme iron which is more readily absorbed by the body is found in animal based sources, such as eggs, liver, chicken, beef, sardines, mussels, clams, squid.	100 g soya beans  170 g beans	Iron absorption is increased by vitamin C, amino acids and sugars, and decreased by coffee, cocoa, tea, calcium, dietary fibre, milk and egg proteins, spices and tomatoes. The mineral copper helps iron transfer in the body. Riboflavin (vitamin B2) and vitamin A contribute to iron metabolism.
<b>Selenium (Se)</b>  RDI 55 mcg	A building block of proteins that act as enzymes in inflammatory processes, it is important for good eyesight and maintenance of the immune system, normal thyroid function.	Cardiomyopathy, risk of heart disease, kidney disease, atherosclerosis, infertility, viral infections.	Brazil nuts, walnuts, sunflower seeds, wholegrain grains, shiitake mushrooms, small amounts of cashew nuts, fruit, vegetables, eggplant	Fish, squid, prawns, oysters and other seafood, beef, poultry, eggs	80 g wholegrain pasta	Brazil nuts are a very rich source of selenium, so it is recommended to eat only 1-2 nuts per day. Higher needs: pregnant women, people who eat a monogastric diet

Mineral in RDI	Benefits	Deficiency	Plant sources	Animal sources	Example for RDI	Additional information
<b>Silicon (Si)</b>  RDI not specified, up to 40 mg in osteoporosis	Building connective tissues and internal organs, collagen biosynthesis, health of cartilage, bones, joints, skin, hair, nails, promotes healing of wounds, sprains, fractures.	Poorer quality of connective tissues, nails and hair, muscle and joint pain, risk of dermatitis, psoriasis, arthritis, osteoporosis.	Pumpkins, onions, cucumbers, cabbage, carrots, turnips, peas, brown rice, soybeans, peas, apples, oranges, peanuts, almonds, oats, barley, grapes.	Fish, egg yolk, bone broth and connective tissue, although plant sources are richer with silicon content.	a handful of peanuts  a plate of pumpkin soup	Excess silicon can cause kidney stones.  Silicon increases calcium absorption.
<b>Copper (Cu)</b>  RDI 1–2 mg	It contributes to the body's iron transport, the maintenance of normal connective tissue, the functioning of the nervous system, normal skin and hair color, and cellular respiration.	Copper deficiency can lead to anemia, weakness, decreased appetite, increased susceptibility to infections.	Whole grains, vegetables, potatoes, leafy greens, avocados, tomatoes, legumes, peanuts, sunflower seeds, cocoa, pepper, prunes, bananas, blackberries.	Liver (beef, lamb), squid and other seafood such as crab and lobster, small amounts can be found in eggs.	80 g legumes  350 g mushrooms	Copper requirements are increased in smokers, after exercise and in the heat. It is also important for protein synthesis, hemoglobin, myelin, collagen, melanin.
<b>Iodine (I)</b>  RDI 100–150 mcg	It is involved in cognitive function, important for nervous system function, skin health, hair and nail health, thyroid function and energy release in metabolism.	Deficiencies in iodine consumption may result in thyroid gland dysfunction, mental disorders in children, development delays, fatigue, drowsiness, dry skin, poor nail quality.	Iodized table salt, some seaweeds, rock salt, yeast, bread, millet, barley flour, rye flour, preserved green olives, dried apricots, spinach, sea grass	Fish and seafood, seaweed, milk and dairy products, eggs (especially the yolk).	5 g iodized salt  140 g hake fish	Iodine absorption is better from fortified foods. The iodine content decreases during cooking. Increased iodine intake is advised for smokers, breastfeeding mothers (deficiency can cause mental retardation in children).
<b>Chromium (Cr)</b>  RDI 40 mcg	It plays a role in carbohydrate, protein and fat metabolism, regulates blood sugar levels and maintains a healthy body weight.	Negative impact on macronutrient metabolism, insulin. Also fatigue, blurred vision, slow-healing wounds, mood changes.	Cocoa powder, dried apricots, dates, poppy seeds, soya flour, pineapple, white grapes, spinach, broccoli, potatoes, peas, lentils, peanut butter, dark chocolate, blueberries, and pasta.	Milk and dairy products, meat and meat products (beef, pork), shellfish.	50 g dried apricots  350 g pineapple	The body needs smaller amounts of chromium. Simple sugars reduce chromium absorption. Vitamin C, niacin and B-group vitamins increase chromium absorption.

Mineral in RDI	Benefits	Deficiency	Plant sources	Animal sources	Example for RDI	Additional information
<b>Sodium (Na)</b> RDI do 550 mg	It maintains osmotic pressure in extracellular fluid, regulates blood pressure, plays a role in nutrient transport, water balance in the body and muscle contraction.	Deficiencies in sodium intake may result in thyroid problems (related to iodine), dizziness, nausea.	Lupin, table salt, bread, preserved vegetables, peanut butter, soy sauce, legumes (lentil, beans, chickpeas).	Seafood, processed meat and other processed foods, chocolate milk.	10 g soy sauce 150 g legumes	Increased intake for athletes. People with high blood pressure should be careful of excessive sodium intake.
<b>Phosphorus (P)</b> RDI 700 mg	Metabolic function, strong bones, healthy teeth, energy levels, tissue and cell health, efficient removal of ballast from the body, acid-base balance...	Starvation leads to fatigue, bone pain and reduced bone density and the risk of osteoporosis. Further, it may cause irritability and anxiety and kidney problems.	Grains, legumes, nuts (peanuts, hazelnuts, Brazil nuts, almonds), seeds (flaxseeds), fermented foods.	Red and poultry meat, liver, crustaceans, shellfish, fish, cheese and other dairy products.	180 g beans 200 g walnuts	Phosphorus helps to reduce muscle soreness after intense exercise. Too high intakes of this mineral can be toxic.
<b>Molybdenum (Mo)</b> RDI 50 mcg	Metabolism of sulfur-containing amino acids, hormonal function, normal growth, normal cell division, good immune function.	Molybdenum deficiency is very rare. If sulfites accumulate in the body, they can cause symptoms such as asthma, breathing difficulties.	Legumes (beans, soybeans, peas, lentils), leafy vegetables (spinach), red peppers, red grapes, grains and grain products, sunflower seeds, cocoa powder, nuts.	Milk, cheese, yoghurt and other dairy products, eggs, liver, chicken, fish.	59 g peas 20-40 g mussels	Molybdenum is present in many foods, so deficiency is not common.
<b>Chloride</b> RDI 2.2 mg	It regulates cellular fluidity, pH, blood pressure and blood volume, and is involved in digestion (hydrochloric acid).	Deficiencies in chloride may end in the following symptoms: fluid loss, nausea, dehydration, loss of appetite, muscle weakness, breathing difficulties.	Table salt, olives in brine, seaweed, cabbage, celery, tomatoes, lettuce, blueberries, bananas, brown sugar, rye	Milk and dairy products, processed meats, fish and other seafood.	50 g olives in brine Glass of celery juice	Most chloride is obtained from salt intake. Care must be taken to avoid excess. Milk, cheese, and yogurt contain chloride, often in combination with sodium.

RDI – recommended daily intake)

## DISHES WITH A SPECIFIC MINERAL CONTENT

Mineral	Dishes containing this mineral
Zinc	Legume stew (beans, chickpeas, lentils, soya, broad beans); or chicory and garlic salad or wholegrain bread with tahini; or seafood salad
Magnesium	Dates stuffed with almonds; or banana smoothie with spinach; or fish with a side dish of potatoes and chard
Potassium	Kale-potato salad; or avocado-garlic dip; or salmon
Calcium	Soya steaks with vegetable or mushroom sauce; or cauliflower with anchovies or tuna or sour turnip and bean iota
Iron	Wholegrain bread and sprouts sandwich; or wholegrain bread with peanut butter and a glass of currant juice; or sauerkraut stew (szegedin)
Manganese	Ground nut and seed balls with blueberries; or seafood salad; or cup of green tea
Selenium	Stuffed squid or mushrooms with garlic; or rice with seafood; or wholesome pasta with tomato sauce and shellfish
Silicon	Pumpkin soup; or brown rice with shellfish; or a handful of peanuts
Copper	Baked pasta stew with mackerel or tuna; or a handful of pistachios; or a cup of cocoa
Iodine	Green salad with boiled egg; or seaweed and rye bread
Chromium	Dates filled with a piece of pineapple; or cocoa drink; or mussels on a bouzoura
Sodium	Handful of nuts
Phosphorus	Mackerel and pickled cucumber spread; or seafood dish
Chloride	Spread of olives from brine and garlic with olive oil; or a glass of celery juice
Molybdenum	Green salad with red grapes; or red pepper halves with feta cheese; or string beans salad

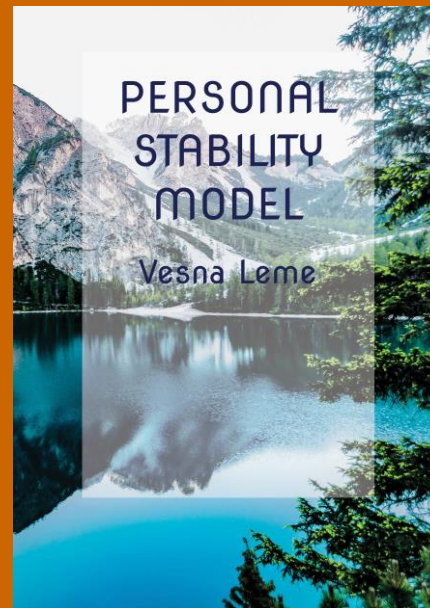




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