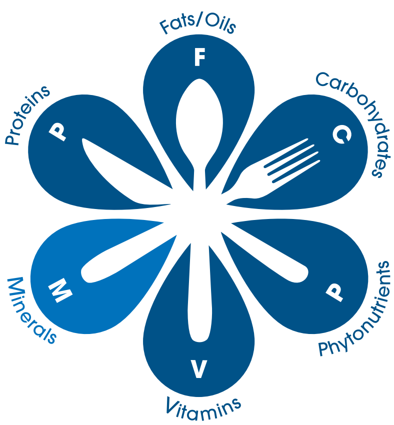
Micronutrients:

Minerals

Minerals are a group of 15 inorganic nutrients (i.e., nutrients that do not contain carbon) that the body needs for normal cell function, growth, and development.[1] The body can't make minerals. They are known as essential nutrients, because it is essential for us to consume them. Minerals are grouped into two categories: major minerals and trace minerals.



Micronutrients are nutrients the body needs small amounts of in order to function properly. This class of nutrients includes minerals, vitamins, and phytonutrients.

Major Minerals

Major minerals are minerals that your body needs on a daily basis in significant amounts in order to maintain fluid balances in the body. Individual minerals also have additional health benefits.

Major Mineral	Health Benefits	Best Food Sources
Calcium	• Bone and teeth health[2] • Muscle and nerve function[2,3] • Regulating pH balance of blood[3]	Cheese, dark leafy greens (collard greens, kale, mustard greens, spinach, turnip greens, etc.), sardines, sesame seeds, tofu, yogurt[2]
Chloride	• Blood pressure control[4] • Electrolyte and fluid balance[5] • Regulating pH balance of blood[6]	Soy sauce, table salt; small amounts in breads, meats, milk, vegetables[5]
Magnesium	• Bone health[7-9] • Controlling blood sugar[10] • Controlling inflammation[11,12] • Energy production[13,14] • Nervous system and mood balance[15,16]	Beans (black, navy, soy), cashews, dark leafy greens (spinach, Swiss chard, etc.), quinoa, seeds (pumpkin, sesame, sunflower)[7]
Phosphorus	• Bone and teeth health[17,18] • Cell/tissue growth and repair[19] • DNA, protein synthesis[20] • Energy production[21]	Fish, eggs, meat, milk, poultry[22]
Potassium	• Blood pressure control[23] • Electrolyte and fluid balance[24,25] • Kidney health[25,26]	Avocado, banana, beans (lima, soy), beets, dark leafy greens (spinach, Swiss chard), lentils, potato, sweet potato, yogurt[24,25]

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Major Minerals (continued)

Major Mineral	Health Benefits	Best Food Sources
Sodium	• Blood pressure control[27] • Blood volume control[28] • Electrolyte and fluid balance[29] • Muscle and nerve function[30]	Almost all foods contain sodium. Processed foods (especially processed meats) contain extremely high levels and should be limited or avoided. Adding a high-quality salt to your food is a good way to ensure adequate intake.[29]
Sulfur	• Cell structure[31] • Cellular metabolism[32] • Connective tissue health[33] • Controlling inflammation and pain[34,35] • Detoxification[36] • Insulin production[37-39] • Lipid and protein metabolism[40,41] • Skin, hair, and nail health[42-45]	Beans, eggs, fish, meats, milk, nuts, poultry[46]

Trace Minerals

Trace minerals are minerals that your body only needs a small amount of in order to function properly. Individual minerals also have additional health benefits.

Trace Mineral	Health Benefits	Best Food Sources
Chromium	• Blood sugar control[47] • Bone health[48,49] • Brain health[50] • Digestion and metabolism of fats and carbohydrates[51,52] • Energy production[53] • Enhances insulin function[54] • Heart health[55,56]	Barley, black pepper, broccoli, green beans, lettuce (romaine), oats, tomatoes[47]
Copper	• Antioxidant protection[57] • Bone health[58] • Cell/tissue growth and repair[59] • Cholesterol balance[60,61] • Energy production[62] • Nervous system health[63]	Apricots (dried), asparagus, dark chocolate, dark leafy greens, lentils, liver (beef), mushrooms, nuts, seeds, shrimp[64]
Iodine	• Cellular energy[65] • Cellular metabolism[66] • Glucose and lipid metabolism[67] • Thyroid function[68] • Thyroid hormone production[68]	Cod, eggs, milk (cow), salmon, sardines, sea vegetables, scallops, shrimp, strawberries, tuna[69]

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Trace Minerals (continued)

Trace Mineral	Health Benefits	Best Food Sources
Iron	• Energy production[70] • Immune system function[71] • Oxygen transport[72] • Red blood cell production[72] • Respiration[72]	Asparagus, beans, bok choy, cumin, dark leafy greens (collard greens, spinach, etc.), eggs, leeks, lentils, organ meats, parsley, poultry, red meats, shellfish, turmeric[73]
Manganese	• Antioxidant protection[74] • Blood sugar control[75,76] • Bone production and health[74] • Skin, hair, and nail health[74]	Beans, cinnamon, cloves, dark leafy greens (collard greens, kale, spinach, etc.), oats, pineapple, rice (brown), seeds, turmeric[74]
Molybdenum	• Amino acid metabolism[77] • Antioxidative effect[78] • Cellular metabolism[79] • Enzyme production[77]	Barley, beans, lentils, oats, peas[80]
Selenium	• Antioxidant protection[81,82] • DNA, protein synthesis[83] • Heart health[84] • Immune system function[85] • Reproductive health[86] • Thyroid function[87]	Asparagus, beef, Brazil nuts, clams, cod, mushrooms, organ meats (liver, kidney), oysters, poultry, salmon, sardines, shrimp, tofu, tuna[81]
Zinc	• Carbohydrate metabolism[88] • Energy metabolism[89] • Immune system function[89] • Lipid metabolism[88] • Male reproductive health[90] • Protein Metabolism[91] • Sensory organ health (taste, vision)[92] • Skin health[93]	Asparagus, beans, beef, chicken, lamb, mushrooms, oysters, scallops, seeds (pumpkin, sesame), shrimp, spinach[94]

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