

MICRONUTRIENTS FOR OPTIMAL HEALTH

Micronutrient deficiencies can occur when our diets are off balance. This can have detrimental effects on the body's ability to function optimally and can impact how we feel physically and emotionally.

Use this resource as a quick guide to the micronutrients individuals are most commonly deficient in and the foods you can eat for a diet rich in micronutrients, which will support optimal health.

VITAMIN A

Vitamin A is a fat-soluble vitamin essential to the formation of skin and bones. It works as an antioxidant in the body. It's also used to synthesize hormones involved in gene regulation.

The body prefers vitamin A from food sources rather than supplements. Vitamin A deficiency is possible with a poor diet.

Vitamin A food sources include:

- Animal liver
- Cantaloupe
- Carrots
- Dark leafy greens
- Grass-fed butter and dairy products
- Grass-fed meat and poultry
- Sweet potato

VITAMIN B12

B12 is required for proper neurological function and red blood cell formation. This vitamin is only found in its natural form in animal products. Vegetarians and vegans are advised to take B12 supplements.

Deficiency is very common and can happen for two reasons:

- Not enough B12 in the diet
- Inability to absorb B12 well (This is especially common for those on acid-blocker medications and individuals with inflammation of the small intestine.)

Vitamin B12 food sources include:

- Eggs
- Fortified nutritional yeast
- Grass-fed beef and beef liver
- Lamb
- Wild-caught fish

VITAMIN D

Vitamin D is a fat-soluble vitamin that acts more like a hormone than a typical vitamin. It's the only vitamin produced in the body. Vitamin D is generated when skin is exposed to sunlight. This vitamin promotes calcium absorption in the gut and maintains adequate calcium concentrations, which promotes healthy bones. It also plays a big role in regulating the menstrual cycle and improving fertility.

Many studies show that up to 50% of the population is deficient, even with adequate sun exposure. This has been linked to underlying inflammation in the body. Supplementation of vitamin D should only be done under the guidance of a physician as too much can be dangerous. Instead, aim to up your vitamin D intake through sunshine and diet.

Vitamin D food sources include:

- Cod liver or cod liver oil
- Dairy
- Eggs
- Fatty wild-caught fish, such as salmon, tuna, and mackerel
- Grass-fed beef liver
- Mushrooms (exposed to UV radiation)

VITAMIN K2 (MENAQUINONE)

Vitamin K2 is essential for bone strength and blood vessels. It also plays a role in healthy pregnancy. Vitamin K2 works closely with vitamin D. Deficiency of vitamin K2 interferes with proper vitamin D function and increases the risk of excessive bleeding.

Vitamin K2 is found mostly in fermented foods. Vitamin K2 food sources include:

- Kimchi
- Natto
- Raw grass-fed dairy
- Sauerkraut
- Yogurt (either dairy or nondairy)

Note: Individuals who take the blood-thinning medication Warfarin should keep their intake of vitamin K—rich foods consistent in terms of portion size and consumption frequency. Significant fluctuations in vitamin K intake can affect the medication's effectiveness, resulting in potentially harmful consequences.

IRON

Iron is a trace element. Animal sources provide the most bioavailable iron. Plant sources are more difficult to break down into a usable form. Vitamin C helps increase the absorption of iron from plant sources. Symptoms of iron deficiency include fatigue, weakness, pale skin, lightheadedness, hair loss, dizziness, and headaches. Deficiency is much more common in women due to menstruation. Blood loss is one of the few ways to lose iron from the body, which tends to hold on to it very tightly.

Iron food sources include:

- Animal liver
- Beans
- Lean meats
- Nuts
- Seafood
- Vegetables

IODINE

Iodine is a trace element necessary for thyroid function. Deficiency can impair fetal and childhood growth. Many grain products are fortified with iodine, but it's best to get iodine from natural sources. Most people get their iodine from eating iodized salt, but as more people move away from iodized salt and consume sea salt instead, deficiency is becoming more common.

Iodine food sources include:

- Baked potatoes (including skin)
- Dairy
- Eggs
- Seafood
- Seaweed
- Strawberries

MAGNESIUM

Magnesium is a major mineral. Among its many jobs, it's essential to maintaining blood sugar balance. Magnesium is widely available in the diet, but our levels have generally decreased as our vegetables are more commonly grown in nutrient-deficient soil. Magnesium deficiency may be a risk factor for type 2 diabetes and PCOS.

Magnesium-rich food sources include:

- Avocados
- Beans
- Green leafy vegetables
- Nuts
- Seaweed
- Seeds, such as pumpkin, sesame, and sunflower

FOLATE (B9)

Folate is essential for pregnancy as it's very involved in the formation and growth of the nervous system. Later in life, it's needed for building red blood cells and maintaining DNA function. Folate is the natural form of B9, and it's the type preferred by the body. Folic acid is a supplement that must be processed in order to be used. Some people have a genetic mutation called MTHFR that makes it difficult to break down folic acid. Deficiency can lead to chronic low energy, anemia, mouth sores, and birth defects.

Folate food sources include:

- Avocado
- Beans and peas
- Beef liver
- Cruciferous vegetables (especially brussels sprouts and asparagus)
- Spinach