

TOA

TENNESSEE ORTHOPAEDIC ALLIANCE

MICRONUTRIENTS: WHAT ARE THEY?

There are around 30 micronutrients which are essential vitamins and minerals we need in small quantities that support many functions in the body.

VITAMINS

Vitamins are organic compounds that are essential for many functions in the body and for maintaining good health. They are required in small amounts, and must be obtained through diet as they cannot be made by the body (except for Vitamin D).

They are classified into two categories, watersoluble vitamins (such as vitamin C and B vitamins), and fat-soluble vitamins (such as vitamin A, D, E, and K).

Functions Each vitamin has a certain function. For example, Vitamin A supports vision, vitamin D is important for bone health, and vitamin C promotes immunity.

Deficiencies When the body does not receive enough of a specific vitamin, it can create health problems. Common deficiencies include Vitamin D, B-12, and Vitamin A.

Toxicity Although not as common, consuming an excess of certain vitamins can be toxic. For example, high amounts of vitamin A can lead to liver damage and bone loss.

MINERALS

Minerals are inorganic elements that are essential for various physiological functions. They cannot be made by the body and must be obtained through the diet.

They are classified into two categories, major minerals (such as calcium, chloride, magnesium, phosphorus, potassium, sodium), and trace minerals (such as zinc, copper, fluoride, iodine, iron).

Functions Each mineral has a certain function. For example, calcium is important for bone health, iron is important for oxygen transport in the blood, and sodium and potassium are important for fluid balance.

Deficiencies When the body does not receive enough of a specific mineral, it can create health problems. Common deficiencies include calcium, iron, magnesium, potassium, and iodine.

Toxicity Although not as common, consuming an excess of certain minerals can be toxic. For example, excessive intake of iron can lead to iron overload, which can damage organs such as the liver and heart.

THE BOTTOM LINE

It is important to know that the following factors may put you at risk for having a nutrient deficiency:

LACK OF DIVERSITY IN YOUR DIET • PROLONGED CALORIE DEFICIT • IMPAIRED NUTRIENT ABSORPTION ALCOHOLISM • YOUNG CHILDREN • OLDER ADULTS PREGNANCY/LACTATION • INCREASED ENERGY NEEDS

The best way to ensure you are meeting your micronutrient needs is by making sure you are eating enough, diversifying your diet, and adding color to your plate. Taking a “food first” approach is ideal for meeting your vitamin and mineral needs, but supplementation is sometimes necessary!

Refer to the **RDA Guide** for recommendations on daily intake of vitamins and minerals for adults, and the **Vitamin and Minerals Foods Lists** for information on common food sources of micronutrients.

Vitamin-Rich Foods
Balanced diet ethnographics

Vitamin	Meat	Spices	Vegetables	Dairy	More Food Sources
B1 thiamin	Chicken liver 12 mg	Paprika 2.46 mg	Carrot 0.839 mg	Butter 0.684 mg	Use: orange, light yellow fruits, leafy vegetables, carrots, grapes, squash, spinach, TMA, low milk
B2 riboflavin	Chicken 2.28 mg	Spinach 0.9 mg	Peas 0.24 mg	Butter 0.141 mg	Use: orange, light yellow fruits, leafy vegetables, carrots, grapes, squash, spinach, TMA, low milk
B5 pantoic acid	Chicken 7.8 mg	Cornmeal 7.04 mg	Mushrooms 2.1 mg	Beans 1.389 mg	Meat, broccoli, seaweeds
B6 pyridoxine	Vegetables 1.23 mg	Meat 1.017 mg	Nuts 0.8 mg	Beans 0.527 mg	Meat, vegetables, live nuts, bananas
B9 folic acid	Meat 1.05 mg	Beans 1 mg	Cereals 0.82 mg	Fruits 0.49 mg	Meat, broccoli, seaweeds
B12 cobalamin	Meat 0.06 mg	Meat 0.02 mg	Seafood 0.002 mg	Dairy 0.001 mg	Meat, fish, eggs, milk
C ascorbic acid	Meat 1000 mg	Spices 566.7 mg	Vegetables 183.5 mg	Fruits 105 mg	Many fruits and vegetables, leaf
D calciferol	Fish 0.019 mg	Mushrooms 0.013 mg	Eggs 0.002 mg	Dairy 0.001 mg	Fish, eggs, liver, mushrooms
E tocopherol	Oils 41 mg	Nuts 26.22 mg	Dairy 2.32 mg	Fruits 1.55 mg	Many fruits and vegetables, nuts and seeds