UF IFAS Extension UNIVERSITY of FLORIDA

FCS8809
doi.org/10.32473/EDIS-fy891-2006

Facts about Minerals[1]

Wendy J. Dahl and R. Elaine Turner[2]



Figure 1. What *are* minerals?
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What are minerals?

If the word "mineral" makes you think of rocks, you're right! Minerals are substances like calcium, phosphorus, iron, and zinc that are found in rocks and the soil. They also are needed for optimal nutrition. There are 16 different minerals that are known to be needed in our diets. Several other minerals may be needed in very small amounts.

What are the different types of minerals?

Minerals are grouped as macrominerals and trace minerals. Macrominerals are those found in larger quantities in the body and needed in larger amounts in the diet. Calcium and phosphorus are two of the seven macrominerals that we need in our diets.

Trace minerals are found in small quantities in the body and are needed in small amounts in the diet. We need to include nine trace minerals in our diets, including iron and zinc.

What do minerals do in the body?

Minerals also work to regulate many body processes. Sodium and potassium are important to nervous system function. The trace mineral selenium works with vitamin E as an antioxidant, preventing cells from being damaged by oxygen.

Where are minerals found in foods?

All the food groups have foods rich in minerals. For example, milk is a good source of calcium, and red meat is rich in iron and zinc. Fruits and vegetables are good sources of potassium. Whole grains are rich in magnesium and selenium. Nuts and seeds are sources of copper and manganese.

It's important to eat a variety of foods from each of the food groups to get all the minerals in your diet.

Are animal products better sources of minerals than plant foods?

Certain minerals, such as iron and zinc, tend to be better absorbed by the body from animal foods than from plant foods. Phytate and oxalate, which are found mainly in whole grains, vegetables, and legumes, reduce the absorption of some minerals (Gibson, Bailey, Gibbs, & Ferguson 2010). Still, plant foods are important sources of many minerals, so diets rich in a variety of plant foods can provide adequate amounts of minerals.

Does food processing affect the mineral content of foods?

Minerals are stable in food. They generally remain in the food even after cooking, canning, or freezing. However, food processing can still affect the content of certain minerals. For example, processing steps involving food additives can increase the phosphorus content (Calvo & Uribarri 2013).

Processing also affects the balance of sodium and potassium in vegetables. Fresh vegetables are rich in potassium and naturally low in sodium. Canned vegetables are usually higher in sodium from added salt.

How much of each mineral do I need each day?

The amount of minerals we need is actually very small – much smaller than the amounts of carbohydrates, protein, and fats required for a healthy diet. Most adults need about 1,000 milligrams of calcium per day (IOM 2011),

but only about 10 to 15 milligrams of iron and zinc per day (IOM 2001). Table 2 lists the Recommended Dietary Allowance (RDA) and Adequate Intakes (AI), the daily intakes that should meet the needs of most healthy people.

We need less than 100 micrograms of selenium (IOM 2000) and molybdenum (IOM 2001). To give you an idea of how little this is, a teaspoon of selenium would satisfy the daily needs of over 90,000 adults!

The Daily Value for a mineral on a food label shows you what percent of a typical healthy adult's need for that vitamin is provided by the food. For example, an 8-ounce glass of low-fat milk provides 30% of the Daily Value for calcium.

Should I take supplements to get the minerals I need?

It is possible to get all the minerals you need by making healthy food choices from all the food groups in MyPlate (see ChooseMyPlate.gov). But there are some situations where supplements may be needed:

- Women in their childbearing years may find it hard to get all the iron they need from food.
- People who are allergic to milk may have a hard time getting enough calcium.
- Pregnant women should ask their physicians about the supplements that are right for them.

Sometimes taking a mineral supplement such as iron causes gastrointestinal upset. If this occurs, try taking the supplement before bed, or use a slow-release supplement.

Can large amounts of minerals be harmful?

With minerals, as with many things in life, more is **not** necessarily better. Many minerals can be toxic in large doses, with side effects ranging from constipation to liver and kidney damage. Too much sodium may contribute to high blood pressure in some individuals.

There are recommendations for the maximum intake of most minerals. Excessive mineral intake usually comes from high-dose supplements. That's why most people should choose to consume no more than the Tolerable Upper Limit (UL) for a mineral each day. The ULs for some minerals are given in Table 4.

If you currently are taking medications, you should check with your doctor or pharmacist to see if there are any reasons that you shouldn't take a mineral supplement. Also, ask if you need to adjust the timing of your mineral supplements and other medications.

Some minerals can interfere with how well a medication works in the body. Alternatively, some medications can interfere with how well the body uses a mineral. That's why it's important to ask your doctor or pharmacist before taking a mineral supplement.

Where can I get more information on minerals?

Your local UF/IFAS Extension family and consumer sciences (FCS) agent at your local UF/IFAS Extension office may have more written information and nutrition classes for you to attend. Also, a registered dietitian/nutritionist (RDN) can provide reliable information to you.

Reliable nutrition information may be found on the Internet at the following sites:

https://www.nutrition.gov/

https://www.nal.usda.gov/programs/fnic

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Table 1. The 16 minerals that we need in our diet (IOM 1997, 2000, 2001, 2005, 2011).

Macrominerals	**Trace Minerals**
Sodium	Iron
Potassium	Zinc
Chloride	Iodide
Calcium	Selenium
Phosphorus	Copper
Magnesium	Fluoride
Sulfur	Chromium
	Molybdenum
	Manganese

Table 2. Recommended Dietary Allowance (RDA) or Adequate Intakes (AI) for selected minerals (IOM 1997, 2001, 2011).

	Calcium (mg/d)	**Phosphorus (mg/d)**	**Magnesium (mg/d)**	**Iron (mg/d)**	**Zinc (mg/d)**
Men					
19-30y	1000	700	400	8	11
31-70y	1000	700	420	8	11
71+	1200	700	420	8	11
Women					
19-30y	1000	700	310	18	8
31-50y	1000	700	320	18	8
51+	1200	700	320	8	8
mg/d = milligrams per day y = years					

Table 3. Mineral content of a multivitamin/mineral supplement.

Supplement Facts	
Serving Size: 1 tablet	
Amount Per Serving	**% Daily Value**
Iron 18 mg	100%
Calcium 200 mg	20%
Magnesium 50 mg	13%
Zinc 11 mg	73%
Copper 0.5 mg	25%
Selenium 19 mcg	27%
Manganese 2.3 mg	115%
Boron 75 mcg	*
*Daily Value not established Percent Daily Value based on a 2,000-calorie diet.	

Table 4. Tolerable Upper Limit (UL) for selected minerals (IOM 1997, 2001, 2011).

	Calcium (mg/d)	Phosphorus (mg/d)	Magnesium (mg/d)	Iron (mg/d)	Zinc (mg/d)
UL	2500*	4000	350	45	40

*For men and women over 50 years, the UL for calcium is 2000 mg/d

mg/d = milligrams per day

[1] This document is FCS8809, one of a series of the UF/IFAS Department of Family, Youth and Community Sciences. Original publication date December 2006. Revised April 2015, October 2018, and May 2022. Visit the Ask IFAS website at https://ask.ifas.ufl.edu/ for the currently supported version of this publication.

[2] Wendy Dahl, professor and Extension specialist, UF/IFAS Department of Food Science and Human Nutrition; R. Elaine Turner, dean, UF/IFAS College of Agricultural and Life Sciences, and professor, Department of Food Science and Human Nutrition; UF/IFAS Extension, Gainesville, FL 32611.

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