

**Minerals are the most important element**

**in your system, yet they are the least understood.**

**This article serves as a layman's guide to understanding  
the importance of those magic minerals.**

By Gary Null

# MAGIC MINERALS

Minerals, or trace elements, as they are commonly called because they exist in such tiny amounts in the body, are needed for overall mental and physical functioning. They are important factors in maintaining proper physiological conditions and processes, such as the acid-base balance, osmotic action, elasticity, and soft tissues—muscles. Your skeletal structure's strength depends upon these magic minerals. The nerves must have them to be tranquil, strong and vibrant. Digestion and healthful assimilation of foods depend upon adequate "mineralization" in your system. From 4 to 6 percent of the body's weight is mineral matter. It is found in all tissues and fluids but especially in the bones, teeth and cartilage. There are close to 30 such minerals.

#### Functions of Minerals:

1. Protein, the building blocks of your body, cannot be formed without the presence of calcium, nitrogen and sulfur.

2. The entire digestive system relies upon the vagus nerve; this nerve cannot function properly without po-

tassium.

3. Vitamins cannot work unless minerals are present. For example, vitamin B<sub>12</sub>, needed for a strong bloodflow, requires the presence of the cobalt mineral.

4. Minerals are needed to combine with some vitamins to remove internal gaseous waste products.

5. Since the insulin molecule contains zinc, and since diabetes results from an insulin shortage, there is the possibility that a deficiency of the zinc mineral may be involved with the ailment.

6. Minerals influence muscular contraction and also dominate the making of nerve response.

7. Minerals have the power to control body liquids and to permit other nutrients to pass into the bloodstream. Without minerals, these other nutrients cannot do their proper jobs.

8. Blood coagulation is controlled by a mineral action. This means that bruises, cuts, scratches, wounds, etc., must have minerals for the healing processes.

9. Your alertness, youthful zest, energy, and thought power, all require such minerals as manganese,

copper, cobalt, iodine, zinc, magnesium and phosphorus for maximum efficiency.

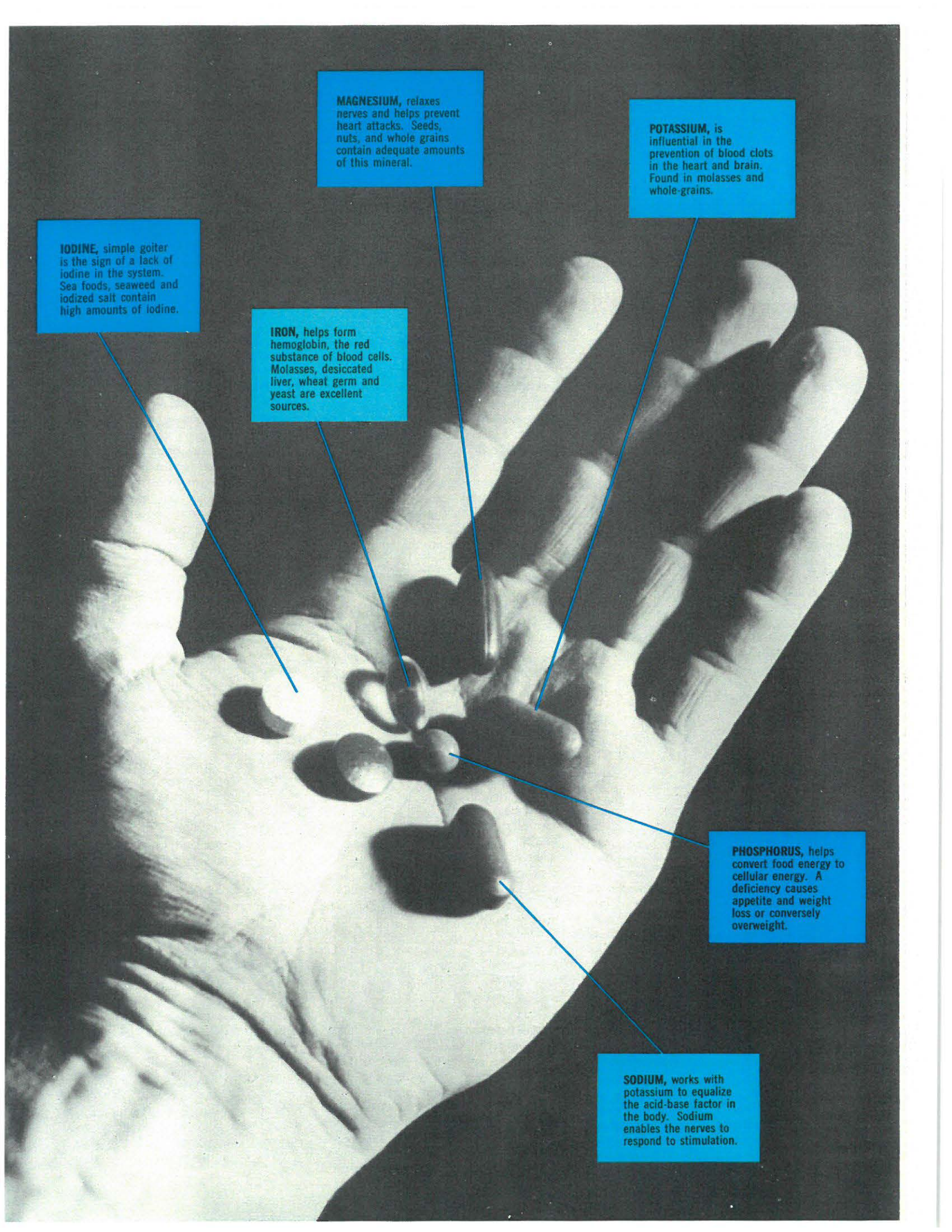
10. Minerals in your bloodstream act to create a germ-killing action. Therefore, minerals have the power to help create antibodies directly within your body's system, provided that other essential raw materials are present.

11. Minerals are essential for strong bones and teeth, which are about 95 percent composed of calcium and phosphorus.

Minerals have the unique power of maintaining a delicate internal water balance that is needed for all mental and physical processes. Minerals draw substances into and out of your cells. Minerals aid in keeping blood and tissue fluid from becoming either too acid or too alkaline. Minerals stimulate the hormonal secretion of glands and cause the nervous system to send commands, mentally communicated, to all parts of your body.

When minerals are ingested in combination with foods, they create what is known as an ash which then  
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**IODINE**, simple goiter is the sign of a lack of iodine in the system. Sea foods, seaweed and iodized salt contain high amounts of iodine.

**IRON**, helps form hemoglobin, the red substance of blood cells. Molasses, desiccated liver, wheat germ and yeast are excellent sources.

**MAGNESIUM**, relaxes nerves and helps prevent heart attacks. Seeds, nuts, and whole grains contain adequate amounts of this mineral.

**POTASSIUM**, is influential in the prevention of blood clots in the heart and brain. Found in molasses and whole-grains.

**PHOSPHORUS**, helps convert food energy to cellular energy. A deficiency causes appetite and weight loss or conversely overweight.

**SODIUM**, works with potassium to equalize the acid-base factor in the body. Sodium enables the nerves to respond to stimulation.



enters into the composition of every single body tissue and fluid. Your body must have minerals to serve as detoxifying (purifying) agents by combining with acid wastes from your cells. Minerals neutralize these wastes and prepare them for elimination. Otherwise, waste products decompose and make you sluggish, sleepy, ache, grouchy and generally unpleasant.

Minerals are also required for Osmotic Equilibrium, which refers to the most dynamic power minerals can offer the body. Your blood and lymph are liquids in which solids are kept in solution. Your cells are always being bathed in lymph fluids. Your cells, too, are semi-fluid containing dissolved matter. If the lymph outside your cells contains as much dissolved solids as found within the cells, you run the risk of having your body's cells shrink and dissolve. But, minerals go to work to equalize the amount of dissolved solids both inside and outside the cells. Therefore, internal and external pressures are equalized and the body cells remain normal.

There are a few simple rules concerning the need for a complete intake of minerals. The first is that you need *all* elements, not just one or two. This means that if you have a shortage of just one mineral, the entire body machinery can become upset. Although the amounts may vary the need is constant.

While there are close to 30 "essential" minerals, all of which are vital, we shall take up the 14 most important ones because they control the use of the others.

## CALCIUM

Calcium must have vitamin D, phosphorus, vitamin A and C in order to function. These other nutrients must have calcium to do their work, too. About 99 percent of your calcium is found in your bones and teeth. Only 1 percent circulates in your body fluids and tissues. Calcium is needed for blood clotting, to activate enzymes (digestive juices), and to regulate passages throughout cellular walls.

Calcium works to normalize the contraction and relaxation of the heart muscles. If your blood calcium level drops, you become nervous and irritated. An adequate calcium intake means that some is stored in the ends of the bones in long, needle-like crystals called trabeculae. This reserve storage is used when you face a stress situation. If you do not have it, your body seizes calcium from your bone structure, usually the spinal and

pelvic bones.

Calcium and phosphorus must exist in a certain proportion if they are to be used properly. The ratio is two to one, or, twice as much calcium as a given amount of phosphorus. The presence of vitamin D helps to normalize this ratio and maintain a good balance.

A deficiency may cause height reduction because of fractures of the vertebrae which result from pressure. Osteoporosis, or brittle bones, is one symptom. Osteomalacia is another calcium-deficiency disease: the adult version of rickets.

Calcium is vital for your nerves; this mineral helps transport impulses of your nerves from one part of your body to another. With a calcium deficiency, cramps or convulsions may occur. Heart palpitations and slow pulse are also traced to low calcium intake. Calcium, too, helps in maintaining the delicate acid-alkaline body balance.

Prime sources of calcium are all dairy and milk products and green vegetables. The best calcium source is bone meal, a supplement made from cattle bones and dried in a vacuum process so the minerals are not depleted. Bone meal is excellent because the calcium-phosphorus balance is built in: other minerals exist in bone meal to facilitate proper calcium absorption.

Bone meal is available in tablet, powder, and flour forms at most special diet and health food stores.

## PHOSPHORUS

This mineral is present in every body cell. About 66 percent of body phosphorus is in the bones in a form known as calcium phosphate; 33 percent is in soft tissue as organic and inorganic phosphate. This mineral converts oxidative energy to cell work. High energy phosphate influences protein, carbohydrate and fat synthesis, and also stimulates muscular contraction, secretion of glandular hormones, nerve impulses, and kidney functioning.

Phosphorus sparks internal energy. It works to neutralize excess blood acidity; it also helps create lecithin and cerbrin, ingredients needed for mental power; it metabolizes fats and starches.

A deficiency of this mineral may cause appetite and weight loss, nervous disorder, mental sluggishness, general fatigue. In extreme difficulties, there is irregular breathing and a pale, wan appearance. Try to avoid white sugar because the delicate calcium-phosphorus balance is interfered with in the presence of white sugar

in your body.

Your brain also needs phosphorus. Although 85 percent of your brain consists of water, the solid matter is made up of phosphorized fats. These fats should increase in proportion as your nervous system matures.

Veal bone meal is an excellent source of phosphorus, as is calcium from eggshells, known as chalaza. These can both be found in food supplement form at most health stores.

## IRON

Every cell needs iron for giving oxygen to the system. Without iron, about 300 quarts of blood, rather than the present six or so, would be necessary to handle oxygen needs. Iron is found in the red blood cells and is needed to form the red colored substance called hemoglobin. Iron influences proteins. Iron must have calcium and the other nutrients in order to properly function.

A shortage of iron may lead to anemia, a sickish skin pallor, and a poor memory. Iron carries oxygen to your brain so it can work properly.

Since you have five million red cells in just one cubic millimeter of blood, and since iron is needed for every cell, you can see how valuable this mineral can be. Iron also works with other nutrients to influence respiratory action.

Good food sources for iron include egg yolks, green leafy vegetables, molasses and sun-dried raisins. The strongest concentration of iron is found in desiccated liver.

## IODINE

You have about 25 milligrams of iodine in your system. Two thirds is in your thyroid gland; the other third is distributed in blood and tissues.

Iodine stimulates the thyroid (a two-part gland that looks like a butterfly, resting against the front of the windpipe) to secrete the thyroxine hormone which regulates metabolism and energy. An iodine deficiency may cause goiter, obesity, and sluggish metabolism.

An iodine shortage causes impairment of several body reactions, including slow mental reaction, dry hair, rapid pulse, heart palpitation, tremor, nervousness, restlessness and increased irritability.

Iodine is needed to utilize fat and influence other nutrients. Iodine is found in all seafoods and vegetables grown in iodine-rich soils. The best source of iodine is found in kelp, a dehydrated seaweed. Another good source is in onions. Dulse is also a good source of iodine.



## SODIUM

This mineral works with potassium to help maintain the favorable acid-base factor in your system. It also helps maintain a normal water level balance between cells and fluids. Sodium enables your nerves to respond to stimulation and transmit it, and provides strength to your muscles so they can contract. It joins with chlorine to improve blood and lymph health. Its main purpose is to render other blood minerals more soluble and prevent them from becoming clogged or deposited in the blood distribution system.

A sodium deficiency may cause stomach and intestinal gas, weight loss, muscle shrinkage. Carbohydrate foods cannot be changed into fat for digestion. You may have ample amino acids, but sodium must process them. Sodium favors the formation and free-flow of saliva, gastric juices and enzymes and other intestinal secretions.

Sodium is found in seafoods, poultry, beets, carrots, chard and dandelion greens. Since this mineral is needed to build a resistance against cramps and heat stroke, it's wise to take one tablet of 1.5 milligrams each day during the summer.

## POTASSIUM

This is another "balancing" mineral; it works with sodium to help normalize your heartbeat and feed your muscular system. It joins with phosphorus to send oxygen to your brain. Sodium and potassium have to have a balance. Sodium is found basically in the fluid circulating outside your cells and only a tiny amount is inside. Potassium is found largely inside the cells and a tiny supply is outside.

Potassium stimulates the kidney to dispose of body wastes. Your blood also needs potassium. A deficiency may cause constipation, nervous disorder, insomnia, slow and irregular heartbeat and muscle damage. Often, the kidneys enlarge and bones become brittle.

Good food sources include all citrus fruits, watercress, mint leaves, green peppers and chicory, as well as blackstrap molasses and figs.

## MAGNESIUM

This mineral is closely related to both calcium and phosphorus in its location and its functions in the body. About 70 percent of the magnesium in the body is in the bones. The rest is in the soft tissues and blood. Muscle tissue contains more magnesium than calcium. Magnesium acts as a

starter for some of the chemical reactions within the body.

It plays an important role as a co-enzyme in the building of protein. There is some relation between magnesium and the hormone cortisone as they affect the amount of phosphate in the blood.

Food sources rich in this mineral are figs, lemons, grapefruit, yellow corn, almonds, oil-rich nuts and seeds, wild rice, apples and celery.

## COPPER

Although iron is used to make blood, copper must be present to convert iron into hemoglobin. This mineral makes both tyrosine, an amino acid, and vitamin C usable. In many cases where a deficiency is present skin sores develop and fail to heal. Also, general weakness and impaired respiration are among the symptoms of a copper deficiency.

Foods containing this mineral include almonds, dried beans, peas, whole wheat, prunes, calf and beef liver, egg yolks and shrimp.

## SULPHUR

This mineral is important for your complexion. It keeps it smooth and youthful plus it keeps your hair glossy and smooth. It acts by invigorating your bloodstream, rendering it more powerful to resist bacterial infections.

It works to cause the liver to secrete bile, maintain overall body balance and helps in the maintenance of oxygen which the brain uses to function properly.

Sulphur works with the B-complex vitamins that are needed for metabolism and strong nerve health. Human hair contains sulphur, too. Sulphur is part of the amino acids that build body tissues and cells.

This mineral is found in fish, eggs, cabbage, lean beef, dried beans, brussels sprouts.

## SILICON

A silicon deficiency may be traced from skin flabbiness, a feeling of chronic fatigue and eyes that are dull and glazed. Silicon is found in hair, muscles, nails, cellular walls, and connective tissues. It joins with other minerals to create tooth enamel and build strong bones.

Good food sources are buckwheat products, mushrooms, carrots, tomatoes, and liver.

## ZINC

This mineral is a constituent of insulin and also of the male reproductive fluid. It is made in the pancreas (large gland located behind the lower part of the stomach) where it helps

in the storage of glycogen, an energy producing substance. It combines with phosphorus to aid in respiration. It also sparks vitamin action. Zinc helps in tissue respiration (the intake of oxygen and expulsion of carbon dioxide and toxic wastes). Insulin is dependent upon zinc for functioning. Insulin shortage leads to diabetes. Zinc helps food to become absorbed through the intestinal wall. It helps manufacture male hormones. Since it is so intimately connected with carbohydrate utilization, a deficiency of this mineral may cause fatigue.

Zinc is found in abundance in liver.

## MANGANESE

Manganese is a mineral which works with the B-complex vitamins in helping to energize the system. It also combines with phosphatase (an enzyme) to build strong bones. Much of the body's supply of manganese is found in the liver. Manganese is needed for good enzymatic function so foods can be digested and vital nutrients extracted for overall body utilization. Manganese helps build resistance to ailments, strong nerve health and, in the expectant mother, promotes milk formation.

Foods containing this mineral are green leaves, peas, beets, egg yolks, and unmilled grains.

## CHLORINE

This mineral works by cleaning out toxic waste products from your system. Chlorine acts by stimulating your liver to act as a filter for waste substances. It stimulates production of hydrochloric acid, the enzymatic digestive juice needed for tough, fibrous foods. Chlorine helps in keeping a youthful joint and tendon condition; it also helps to distribute hormones secreted by your endocrine glands.

A chlorine deficiency may cause hair and teeth loss, poor muscular contractibility and impaired digestive power.

Good sources of chlorine include kelp, dulse, sea greens, leafy greens, rye flour, and ripe olives.

## FLUORINE

This mineral helps to strengthen tooth enamel. But, too much of it may cause abnormal and unsightly tooth mottling.

Studies have shown that when an excess is taken, such as by means of fluoridated water, bones become weak and there is an adverse reaction upon internal organs.

This mineral can be found in almost any of the food sources listed for the other thirteen minerals. ■