

WHAT YOU SHOULD KNOW ABOUT VITAMINS AND MINERALS

In the early part of this book I wrote concerning the condition of the United States of America: we are the wealthiest nation in the world, the most highly educated nation in the world, and yet, according to the United Nations health survey, we are one of the sickest nations in the world. Why? Because Americans do not know how to live a healthy life. It is just as easy to get into the habit of eating foods that are high in nutrients as it is to get into the habit of eating junk foods. The worst of it is, that the people who are living on junk foods usually are not taking any vitamins or minerals to supplement for the loss of nutrients. Why? Because we are taught that we can get enough of the vitamins and minerals out of the foods that we eat, and do not need food supplements. But this is a grossly misleading generalization.

"Vitamin and mineral supplements are certainly one way of improving the diet. I disagree with the FDA (Food and Drug Administration) on the question of dietary supplements. They are 100 percent wrong when they say if you eat a balanced diet you don't need supplements. The RDA's (Recommended Dietary Allowances) of nutrients were established as being sufficient for people in good health - only. In poor health, there are many important differences in the requirement for nutrients."

"We live in a country where we have more good doctors, more great medical schools, and more hospitals, more education, and more great scientists, and more money than any other place on earth. We hear so much about the great scientific advances that have been made in public health and medicine. And it is true that great advances have been made in certain branches of medicine. But despite all this, everybody in the country is sick. I do not know anyone anywhere who does not have some physical disability. It is hard to find a child in school any more without dental cavities. Last year we had more cancer than ever before. We had more heart disease. It is the leading cause of death, killing young people before the age of forty all over the land. We had more high blood pressure, more stomach ulcers, more rheumatism, more diabetes and more mental disease. Fifty percent of the hospital beds in America are filled with mental patients. They are running out the top windows all over the land and more mental hospitals are being built every day. Perhaps we are not so smart after all. Maybe something is wrong here. There are places in the world where these degenerative diseases do not occur. The first great fundamental reason why all of us are sick is a lack of proper nutrition."2

I certainly agree with both Dr. Ershoff and Dr. Nichols that we are not getting enough nutrients out of the food that we eat. As a result of this, we are in need of food supplements. One thing that has been overlooked is the fact that cooking and baking destroys most water-soluble vitamins and all of the enzymes. Further loss of vitamins appears when food is kept in storage. If you want to eat a tomato with all of its nutrients, you have to go out to the garden or field, pick it fresh and eat it right there. From the time it is picked until people buy it and put it on the table to eat, many days have gone by. In the meantime, the tomato has lost a tremendous amount of its vitamins. This holds true for all other food as well.

There are two types of vitamins - the water-soluble vitamins, of which there are 12 recognized, and the oil soluble vitamins, of which there are 4: Vitamins A, D, E, and K.

VITAMIN A

FUNCTIONS: Vitamin A is one of the most important vitamins. It prevents infections, notably of the eyes and respiratory system. In the respiratory system are cilia which wave back and forth. These cilia depend mostly on Vitamin A. It helps promote growth and longevity, maintains health and vigor, and is essential for normal reproduction, lactation, and bearing of children. It promotes appetite and digestion. It helps to resist infection; it is needed for healthy gums, teeth and bones, and for visual purple production, which is essential for night vision.

DEFICIENCY SYMPTOMS: Night blindness, sinusitis, frequent colds, abscesses in ears, infection in respiratory system, pneumonia, skin diseases, acne and reproductive difficulties, abortion.

VITAMIN B-1 - THIAMIN

FUNCTIONS: Metabolism of fats, carbohydrates, and amino acids; to help produce hydrochloric acid in the stomach for digestion; for the nervous system; learning capacity; stabilization of appetite; muscle tone, especially of the heart, stomach and intestines.

DEFICIENCY SYMPTOMS: Beriberi, weakness, emaciation, fatigue, loss of appetite, severe weight loss, gastrointestinal disturbances, weak and sore muscles, weak heart with palpitations, nervousness, irritability, forgetfulness, and enlarged liver.

VITAMIN B-2 - RIBOFLAVIN

FUNCTIONS: It is needed for nitrogen balance; metabolism of tryptophan, an amino acid; metabolism of lipids (fatty acids) essential to normal growth; tissue maintenance; metabolism of protein, fatty acids, and carbohydrates.

DEFICIENCY SYMPTOMS: Light sensitivity, eye fatigue, cataracts, cheilosis (cracks and sores in corner of mouth), inflammation of the tongue, inflammation of the eye, oversensitivity to light, blurred vision, mental sluggishness, insomnia, poor digestion, and retarded growth.

VITAMINS B-3 - NIACIN OR NIACINAMIDE

FUNCTIONS: B-3, Niacin, is also known as nicotinic acid. Niacinamide is also known as nicotinamide. Niacin is a vasodilator, which means it dilates the blood vessels. Physicians sometimes use it to increase peripheral circulation in the ears and head. Niacinamide does not dilate the blood vessels because the histamine factor is not there, but some people develop nausea when taking over 500 mg. of niacinamide. "Massive doses of niacin have been given during the last twenty-five years without evidence of any serious or sustained damage to the body organs. This is not true for niacinamide, which may produce liver damage in doses as low as 3 gm. daily."³ (3000 mg. daily) "The only things which niacin may 'blast away' are the symptoms of schizophrenia or arthritis or alcoholism. The development of niacin therapy (niacin used in conjunction with Vitamin C) is one of the great advances in medicine, heralding a new age in biochemical treatment of the schizophrenias."⁴ Niacin should always be given with Vitamin C and the B-complex vitamins. Anyone taking niacin should read over the niacin instructions in Part 2, Chapter 30 for taking it. As a coenzyme, it assists in the breakdown and

utilization of proteins, fats, carbohydrates, and plays an essential role in tissue oxidation. For this reason, it is necessary in order to maintain the health of all tissue cells.

DEFICIENCY SYMPTOMS: Pellagra, muscular weakness, skin eruptions, appetite loss, depression, fatigue, schizophrenia, hypoglycemia (low blood sugar), headaches, dizziness, and various aches and pains.

VITAMIN B-6 - PYRIDOXINE

FUNCTIONS: "Because B-6 is an important coenzyme in the biosynthesis of hemoglobin, some anemic patients who do not respond to iron may actually be only B-6 deficient."⁵ As a coenzyme, it is important for the metabolism of many of the amino acids, fats and unsaturated fatty acids. This includes the involvement of the DNA and RNA synthesis. It is also essential in maintaining the sodium and potassium balance, especially for the nerves. It is also involved in antibody formation and hemoglobin production.

DEFICIENCY SYMPTOMS: Convulsions, hyperirritability, depression, disability in learning, weak memory, abnormal auditory acuteness, decrease in growth rate, arthritis, anemia and hair loss. It is very important in control of diabetes and hypoglycemia. Megadoses may also relieve walking and speech disturbances.

VITAMIN B-12 - COBALAMIN

FUNCTIONS: B-12 is also known as cyanocobalamin. It is needed for blood cell formation, especially for the bone marrow where blood cells are formed, and for iron absorption. It is also needed for the longevity and function of all cells, and plays a primary role in nucleic acid synthesis, neural functions and the maintenance of nerve cells.

DEFICIENCY SYMPTOMS: Irritability, drowsiness, chronic fatigue, mental depression, nervousness, pernicious anemia which may bring on spots before the eyes, ringing in the ears, vital organs starved for oxygen, enlarged liver and spleen, and neurological damage. When taking B-12 as a supplement, folic acid should also be taken with the B-12.

FOLIC ACID

FUNCTIONS: Folic acid is also one of the B-complex factors, working together with B-12 to prevent and to overcome anemia. Like B-12, it is needed for nucleic acid and red blood cell formation; also in the synthesis and utilization of amino acids.

DEFICIENCY SYMPTOMS: Because of the interrelationship in the biochemical action of both folic acid and Vitamin B-12, the deficiencies are attributed to both of these vitamins. The deficiencies cause macrocytic anemia, a lack of red blood cells; nerves and brain may also become affected, causing memory impairment. Other symptoms are digestive disturbances, redness of the tongue, and birth deformities.

BIOTIN

FUNCTIONS: Biotin is another B-complex factor, needed in the metabolization of proteins, fats and carbohydrates, and in the formation of nucleic acids and synthesization of some non-

essential amino acids. It is also needed for cell growth, and in the production of glycogen, which is stored in the liver. Biotin acts as a coenzyme to a number of enzymes.

DEFICIENCY SYMPTOMS: The symptoms of biotin deficiency are similar to those of B-1, Thiamin. These include: pallor of both skin and mucus membranes, poor appetite, deep depression, muscular pain, nausea, loss of appetite, insomnia, and increased sensory sensitivity.

CHOLINE

FUNCTIONS: Choline is another B-complex factor. One of the most important factors of choline is as a constituent of acetylcholine, which is very important in bridging the nerve endings. People who smoke become extremely nervous because acetylcholine is partially destroyed by the poisons inhaled in smoking. People who want to give up smoking should take choline, inositol and pantothenic acid, along with the super B-complex vitamins, to assist in the restoration of acetylcholine. It also aids in gallstone prevention, regulation of the gall bladder, and in metabolization of fats and synthesization of some of the hormones.

DEFICIENCY SYMPTOMS: Nervousness, heart conditions, high blood pressure, kidney and liver problems and growth problems.

INOSITOL

FUNCTIONS: Inositol is another of the B-complex factors; it is very closely related with choline, and the two should be taken together. It helps to prevent cholesterol buildup in the arteries, and to break up abnormal deposits of fat. It helps to prevent nerve damage and is used in the treatment of muscular dystrophy, in conjunction with Vitamin E and the super B complex vitamins. It also is needed for the growth factor.

DEFICIENCY SYMPTOMS: High cholesterol buildup, arteriosclerosis, skin ailments such as eczema and loss of hair.

PANTOTHENIC ACID

FUNCTIONS: Pantothenic acid, another of the B-complex factors, is an essential element of coenzyme A. It is needed for the production of acetylcholine in the nervous system. It is also involved in the utilization of nutrients and is essential for energy metabolism, for the body's immune system and especially for the adrenal glands and the adrenal cortex glands, which produce cortisone. It helps to prevent stress symptoms. It is also necessary for fat and cholesterol synthesization. This vitamin should not be taken by itself, but should be taken with the super B-complex vitamins. People suffering from hypoglycemia and allergies need this vitamin.

DEFICIENCY SYMPTOMS: A contributing factor of hypoglycemia and arthritis, burning, numbness and tingling of the hands and feet, fatigue, tired feelings, loss of appetite, constipation, low blood pressure and nervousness.

PABA - PARA AMINO BENZOIC ACID

FUNCTIONS: This is another of the B-complex factors. It is needed to prevent greying of hair, but once the hair is grey, it will not darken it; it also helps to prevent loss of pigmentation and eczema. It is a part of the coenzyme system, needed for the production of blood cells and for protein metabolization. PABA, taken with B-6, may lessen the possibility of sunburn. It has been reported that PABA, taken with pantothenic acid, will help in re-pigmentation of patchy white areas of the skin, known as vitiligo.

DEFICIENCY SYMPTOMS: Greying of the hair, patchy white areas on skin, nervousness, irritability, depression, tired feelings, and gastro-intestinal disorders.

PANGAMIC ACID (B-15)

FUNCTIONS: Some authorities, including Russian scientists, claim that this vitamin is a part of the B-complex factors. Like all new vitamins, it is viewed with skepticism, but regardless of how people feel about it, the Russian scientists claim that it has helped cardiac patients and athletes. It is needed for metabolization of proteins, fats, and carbohydrates, helps to prevent fat from infiltrating into the liver, and is reported to extend the lifespan of the cells in the body. It is an aid to the nervous system and the glands, to the efficiency of the body in using oxygen, and to the heart.

DEFICIENCY SYMPTOMS: Heart problems, premature aging, nervous disorders, lack of oxygen to the tissues, liver problems and glandular disorders.

VITAMIN C (ASCORBIC ACID)

FUNCTIONS: When taking Vitamin C, it is best to take Vitamin C complex, which includes not only ascorbic acid, but also bioflavonoids, which come from citrus fruits; rutin, which comes from buckwheat; and hesperidin. So marvelous a vitamin is Vitamin C that whole books have been written on its merits as an outstanding aid to good health and longevity. Its potency can be lost or destroyed through light, air, and heat. Articles have been written showing how Vitamin C is mainly responsible for the formation and maintenance of collagen protein. Collagen is needed as connective tissue for the entire body, including skin, muscle, tendon, cartilage, and bone. It aids in preventing colds, in digestion, in the healing of wounds; it strengthens the immune system and helps to protect the body against infection. It also has a type of antihistamine action. It aids in the secretion of hormones, especially from the adrenal glands; in digestion; and is an aid to the bloodstream and blood cells, including the strengthening of the blood vessels themselves. It also aids the body in protection against infection, and in the healing of wounds.

DEFICIENCY SYMPTOMS: A weakening of the immune system, susceptibility to infection, poor digestion, susceptibility to colds and bronchial infections, inflammation of the gums which may bleed easily, lack of energy, susceptibility to infection and many other symptoms too numerous to mention.

VITAMIN D

FUNCTIONS: Vitamin D is an oil-soluble vitamin. It is known as the sunshine vitamin because it is formed when the ultraviolet rays of the sun, hitting the skin, change a form of cholesterol which is a precursor of Vitamin D in the skin into cholecalciferol (D-3) - the same substance that we get as natural Vitamin D in fish liver oils. Chemical laboratories have managed to synthesize D-3, as well as a number of stronger members of the Vitamin D group - including Vitamin D-2, D-4, D-5, and D-6. Vitamin D is needed to regulate the absorption of calcium and phosphorus; thus it is important to the calcification of bones and teeth, promotes growth in children and prevents rickets.

DEFICIENCY SYMPTOMS: Malformation of teeth, inadequate absorption of calcium and phosphorus, faulty mineralization of bone and tooth structures, skeletal malformation, rickets (bow legs, knock knees and other bone malformations), osteomalacia (a softening of the bones also known as adult rickets), osteoporosis (a mineral depletion of the bones in which the bones become pitted with holes like a sponge and are weak and brittle), muscular weakness, loss of appetite, and loss of weight.

VITAMIN E

FUNCTIONS: Vitamin E is another oil-soluble vitamin. There are four known tocopherols, known as alpha, beta, gamma, and delta. When all four are combined in the Vitamin E supplement it is called Vitamin E complex. This is one of the most important of the vitamins and is necessary for conception, pregnancy, and lactation. One of the important functions of Vitamin E, along with selenium, is to aid in carrying oxygen to the tissues. When Vitamin E is taken with selenium, it is the author's opinion that the aqua-E, or the water-dispersible Vitamin E, is more desirable than the oil-based form. Vitamin E is also essential for the adequate absorption of iron. It is an antioxidant, protecting all the fat-soluble vitamins. It prevents internal scar tissue formation, and will prevent external scar tissue formation, if oil-soluble Vitamin E is used along with the oil-soluble Vitamin A in this proportion: Vitamin E, 400 I.U., and Vitamin A, 25,000 units. Mix together and apply externally to burns. This will give a dramatic performance in healing. Vitamin E also is a protection against the effects of breathing smog and its chemical pollutants. It is an aid to many of the hormones, and very important in maintaining a healthy heart. However, the results are twice as good when used in conjunction with selenium.

DEFICIENCY SYMPTOMS: Lack of oxygen in the tissues, heart ailments, spontaneous abortion, uterine degeneration, sterility in men and women, menstrual problems. One of the contributing factors in muscular dystrophy. There is an epidemiological link between the increase in heart disease and the disappearance of Vitamin E from our food due to empty calories and over-processed foods, from which most of the nutrients have been removed.

VITAMIN K

FUNCTIONS: This is another oil-soluble vitamin which helps to keep you from bleeding to death. Depletion of Vitamin K in the bloodstream can prolong clotting time, thus causing one to bleed to death. Anti-coagulant drugs, often prescribed for high blood pressure in heart patients, can dangerously reduce the clotting ability of the blood and may bring on a hemorrhage. My sister

was taking an anticoagulant drug for high blood pressure, and had a massive cerebral hemorrhage which caused her death.

DEFICIENCY SYMPTOMS: Serious or abnormal bleeding due to delayed blood clotting time. Internal bleeding, such as a hemorrhage to the brain or any other portion of the body, and subcutaneous hemorrhages.

HOW TO TAKE SUPPLEMENTS

Vitamins and minerals are called food supplements because they supplement the food that you eat. In other words, they enrich the nutrient value of your food. Therefore, supplements should only be taken with a meal, with a little milk, juice, or water. If you crack them between your teeth you can usually swallow several at a time, which is the easiest way to take them. In addition, they are more easily digested when cracked because then the digestive juices can more readily begin dissolving them. Vitamin B complex or any of the B factors are usually not tolerated by people who have inflamed or irritated stomachs. This is solved usually by taking it with the largest meal of the day.

'Benjamin H. Ershoff, Ph.D, Research Professor of Biochemistry at Loma Linda University School of Medicine, quoted in Prevention, June, 1976, p. 46.

2Lecture by Dr. Joe D. Nichols, 1960 quoted by Kurt W. Donsbach,
Ph.D. in Vitamins.

'Carl C. Pfeiffer, Ph.D., M.D., Mental and Elemental Nutrients, p. 121.

4Ibid., p. 123.

'Ibid., p. 148.

MINERALS

One of the most important subjects for discussion regarding our health is that of minerals. There are 21 essential mineral elements necessary for the human body. These are as follows:

Calcium	Phosphorus	Magnesium
Potassium	Sodium	Chlorine
Iron	Iodine	Copper
Manganese	Sulphur	Zinc
Fluorine	Cobalt	Molybdenum
Selenium	Chromium	Nickel
Tin	Vanadium	Silicon

The ground on which we walk contains these same minerals; the difference is that in the ground they are in the inorganic form and in our bodies they are in the organic form. Man cannot utilize the inorganic form as he can the organic form. When we eat fruits, vegetables, grains, legumes, dairy products, and eggs, we are getting the organic minerals. The chelation process produces organic minerals which are absorbed into the body very quickly. Let us illustrate this. The ground upon which we walk contains inorganic minerals. Our bodies are made up of organic minerals. Man cannot eat clay and live, even if it has all of the necessary minerals, because they are in inorganic form, whereas man needs the organic form. As stated above, our bodies are made of the same minerals found in the ground, but in the organic form. This statement is supported by the Good Book, which I will paraphrase, "God first formed man from the dust of the inorganic minerals and then breathed into this form the breath of life, thus changing the inorganic substances into organic flesh and man became a living soul."

I want to make it very clear that minerals cannot become effective without the necessary vitamins because vitamins are the vital spark which ignites the 21 mineral elements and makes them effective. This is illustrated in Figure 1. To illustrate this, the vitamins represent the battery in your car and the minerals represent the gasoline in your car. Can you run your car without a spark from the batteries? No. The tank can be filled with gasoline but it will not move unless the battery is alive and the spark ignites the gasoline. So it is in our body. We need vitamins to ignite the minerals to make them effective.

Many of the foods that are eaten by people today are called empty calories or junk food. These people are suffering from malnutrition. This is why disease is so rampant in this country today. It is a good idea to supplement our diet with vitamins and minerals. But it must be remembered, if we are not getting organic minerals, then we should by all means use the chelated minerals. Kurt W. Donsbach, Ph.D., D.Sc., in his outstanding book entitled "Nutritional Approach to Superhealth" makes this statement:

"When minerals are discussed, it is essential that the subject of chelation be covered. Recently a great deal of interest has focused on chelation as a form of more efficiently absorbed minerals. Consensus of opinion is unanimous that the ability of the body to receive the mineral substance through the intestinal wall in a chelated form is the way which Nature handles all minerals normally in the intestinal tract. The problem with stomachic chelation can be most easily demonstrated by outlining the various steps in the process:

"1. Mineral is ionized - Example: Calcium lactate is split into basic calcium and carbon, hydrogen, and oxygen.

"2. Protein, which must be present, is broken down to amino acids by hydrolyzing effect of hydrochloric acid and other digestants.

"3. Free amino acids attach themselves around the bare mineral and form an easily absorbed molecule.

"It is apparent that several factors must be present simultaneously in order for optimum chelation to take place in the stomach:

"A. Minerals and proteins must be taken in at the same time.

"B. Adequate digestive acids must be present to ionize the mineral and also break down the proteins to amino acids.

"C. The amino acids must combine in a stable formation with the base minerals - necessitating an abundance of certain amino acids."

To illustrate still further why inorganic minerals are not the best, let us consider dolomite. Dolomite is an inorganic mineral which comes from rock, known as limestone. This is mined, crushed, and finally powdered. If you pick up a bottle of dolomite you will notice how heavy it is because it is powdered limestone, an inorganic mineral. We should be eating organic or chelated minerals, but not inorganic minerals. Fortunately, most companies who sell food supplements are now coming out with organic and chelated forms.

To illustrate an organic mineral, let us consider carrot calcium. Carrot calcium is an organic mineral. Kelp, which is high in iodine, is also an organic mineral. When you eat wheatgrass or alfalfa grass which are manufactured in powdered form or tablets, your intake is high in organic minerals. The food you eat contains organic minerals. (We are not considering junk foods or empty calories.) Minerals are just as important as vitamins; the two go together when considering good health.

When will people wake up and realize that junk foods and empty calories are shortening their lives? We need vitamins and minerals; but today the American diet is vitamin and mineral starved. As you read through this chapter, you will notice how important minerals really are in maintaining good health.

CALCIUM:

Calcium is one of the most important minerals in the body. The United States Government Recommended Daily Allowance (USRDA) is 1000 milligrams of calcium and 1000 milligrams of phosphorus. What they have failed to recognize is that too much phosphorus interferes with the metabolization of calcium. We would all do well to go by the formula that God implemented when He created mother with her milk. In the chapter on Food Chemistry Analysis, you will find Human Milk and you will notice that 3-1/3 ounces contains 33 milligrams of calcium and only 14 milligrams of phosphorus. It is my opinion that God knows the proper proportion of calcium to phosphorus. This means that we should be eating 2-1/3 times more calcium than phosphorus. However, let us consider the bones in our bodies. The calcium ratio to phosphorus is 2.5 to 1. If we go according to the bones, we should be eating 2-1/2 times more calcium than we do phosphorus. Calcium builds bones, teeth, muscle, and nerves. It counteracts acidity, aids in vitality, soothes the nerves thus decreasing nervousness. Calcium contracts the heart muscles and potassium and sodium relax the heart muscles. Calcium is needed for the contraction of all muscles.

DEFICIENCY SYMPTOMS: Osteoporosis, a softening of the bones, osteomalacia, another type of bone softening, rickets which causes bowlegs and knock knees, poor teeth, nervousness, pasty complexion, tired feelings, lack of energy, and heart problems.

PHOSPHORUS:

In my chapter on Food Chemistry Analysis, you will find that some of the food that we eat is higher in phosphorus than in calcium. For this reason, as a rule, we do not need phosphorus supplements. But many of us do need calcium supplements. Phosphorus performs many more functions than any other mineral in the body. Approximately 80% of the phosphorus is in the bones and 20% is found in the tissues. It is closely related with calcium and therefore is needed in the bones, teeth, muscle, and the brain. It is also needed for nerve tissue, especially the heart. It aids in the growth of hair, strengthens the mental powers and is needed for cell growth and repair.

DEFICIENCY SYMPTOMS: Nervousness, neuralgia, insomnia, poor hair growth, numbness of skin, shallow breathing, melancholia, loss of appetite, irregular breathing, fatigue, poor bone and tooth structure.

POTASSIUM:

Potassium, along with sodium, is needed for relaxation of the heart muscle, as well as for all muscles in the body. It aids in producing alkalinity of the body, stimulates the liver, aids in the heartbeat, is needed by the nervous system. It works with calcium in that it stimulates the nerve impulses for muscle contraction. The highest mineral element found in practically all food is that of potassium. As a result of this, the need for additional supplements of potassium is not indicated where people are eating a good healthy diet.

DEFICIENCY SYMPTOMS: Nervousness, periodic headaches, muscular fatigue, heart ailments, insomnia, chills and continuous thirst, and edema.

SODIUM:

Sodium in the organic form does not present any problems, but sodium chloride, the inorganic form, can cause problems when taken in excess. This is why the physician will take a patient off of sodium chloride when there is a blood vascular or heart condition. The function of organic sodium is to check fermentation, prevent clotting of the blood, stimulate the spleen, regulate heat in body fluids, increase the peristaltic action of the bowels, neutralize acid; along with potassium it aids in the relaxation of the heart muscle as well as other muscles in the body, and aids in the normal cellular fluid level, pH. An excessive intake of sodium chloride, the inorganic sodium, causes edema, kidney damage, heart problems, and hypertension.

DEFICIENCY SYMPTOMS: Delayed digestion, drowsiness, insomnia, acid conditions and dehydration.

MAGNESIUM:

Next to calcium, magnesium is one of the most important minerals. Vitamin supplements should never be taken without one magnesium tablet, because it aids in metabolization of the vitamins. To illustrate this, children in a home were divided into two groups. One group received magnesium tablets with their vitamins; the other received placebos, tablets with no nutritional value. After several months, the physician conducting this survey checked the

records of all the children and found that those who took magnesium with their vitamins had less than half the sickness than those who took the placebos. Magnesium aids in the metabolization of calcium and Vitamin C, the maintenance of protein structuring of DNA and RNA, as an activator of enzymes, in the pH of acid and alkaline balance; it reduces fits of temper and works with Vitamin B-6 in controlling many nervous disorders.

DEFICIENCY SYMPTOMS: Poor digestion, constipation, insomnia, irritability, fits of temper, extreme nervousness, confusion, rapid pulse rate, heart problems, convulsions and seizures.

IRON:

Iron aids in production of hemoglobin and aids the red cells in carrying oxygen to the tissues. It supplies energy and vitality, nourishes the tissues from the blood stream, aids in resistance in disease and in the growth of children.

DEFICIENCY SYMPTOMS: Palpitation of the heart, fatigue, increases old age, cold feet, craving for stimulants, pale complexion, brittle nails, anemia, shortness of breath and lack of appetite.

MANGANESE:

This mineral is needed for the glandular system, such as the pituitary gland, pancreas, liver and kidneys. It acts upon the nervous system and the brain cells. It increases the ability to read small print and notice objects at greater distances; strengthens the memory; quickens coordination of thought and action; aids in metabolization of some of the vitamins, enzymes, carbohydrates, and glucose, in the synthesization of lipids and cholesterol, and in the function of the pancreas.

DEFICIENCY SYMPTOMS: Profuse perspiration, lack of memory, tendency to breast ailments, nervousness, eye problems, ataxia - a lack of muscular coordination, noises in the ear, loss of hearing and dizziness.

IODINE:

This trace mineral is forbidden by the government to be administered in large doses. The truth of the matter is that the iodine which is usually prescribed is inorganic. However, the organic iodine has never been known to cause any ill effects irrespective of the amount that has been eaten, as in many of the seaweeds such as kelp which are eaten by Orientals. It is an aid in regulating the metabolic function, one of the primary functions of the thyroid; it prevents goiter, overcomes albuminous toxins in the blood, aids gland and cell action, and physical and mental development.

DEFICIENCY SYMPTOMS: Goiter, trouble with throat, nerve tremor, short and labored breathing, slow mental reactions, irritability, nervousness, obesity, brittle nails and dry hair.

FLUORINE:

This is another trace mineral over which there has been great controversy. The big problem arising is when municipal governments put sodium fluoride into the drinking water, which they claim aids in preventing dental caries. Organic fluorine is found in many of our foods, such as

goat's milk, egg yolk, endive, cabbage, cauliflower, brussel sprouts, avocados, tomatoes, watercress, and cottage cheese. Its action is to strengthen the bones; act strongly on the spleen, teeth, and enamel of the teeth; protect against infections; and increase the metabolization of calcium. Warning: Excess amounts of fluorine cause mottled teeth and restrain the action of the enzyme, phosphatase, which is necessary in calcium utilization.

DEFICIENCY SYMPTOMS: Poor teeth and bone development, difficulty in thinking and tired upon arising in the morning.

COPPER:

Copper, another trace mineral, is essential for good health, but an excess of copper can be dangerous to your health. People eating good healthy food do not need copper supplements. It has been reported that an excess of copper, as with lead and mercury, can cause insanity. Eliminate empty calories and the junk foods, live on a good balanced diet, and you will need no copper supplements. "The recent studies of Dr. Oscar Roth, of the Yale University School of Medicine reveal serum copper is high with use of the birth control pill, and the copper level of the heart is higher than normal in those dying from heart attacks."² It is an essential trace mineral element and is found in all tissues of the body. It aids in iron metabolization, is needed for skin and hair pigmentation, for bone formation, and in the production of red blood cells and hemoglobin; and it assists in the utilization of Vitamin C.

DEFICIENCY SYMPTOMS: Anemia, impaired respiration, skin sores and general weakness.

CHLORINE:

Chlorine is another trace mineral but is an essential nutrient. Food supplements of chlorine are not necessary because a good healthy diet contains enough. It is found in milk, kale, beets, radishes, rye flour, coconut, tomatoes and ripe olives. It aids in expelling wastes and in sugar and starch metabolization; however, its main function is as a part of the hydrochloric acid produced in the stomach for digesting proteins. Chlorine in drinking water may be one of the reasons why we have an epidemic of heart problems, as chlorine is very destructive in Vitamine E, which is essential to maintaining a healthy heart.

COBALT:

Cobalt, another trace mineral, is considered a part of Vitamin B-12, cobalamin. You will notice that the first five letters of cobalt make up the first five letters of cobalamin. That is because they are so closely connected. The lacto-ova vegetarian probably gets enough B-12 or cobalamin; but, as stated in one of my previous chapters on B-12, cobalamin, the strict vegetarian should be taking supplements of B-12 along with folic acid. All deficiency symptoms which pertain to iron are also applicable to cobalt.

CHROMIUM:

This is another trace mineral essential to maintaining good health and eliminating many allergies. When purchasing chromium, specify GTF chromium. GTF means glucose tolerance factor. The amount taken should be 200 mcg. (micrograms). Unfortunately, this trace mineral

element is lost in the refining processes of our food; therefore, the more natural food that you eat, the better. It is needed to aid in the blood sugar level, in glucose metabolism, and in the synthesization of fatty acids. Those who have problems with low blood sugar or diabetes should take one tablet of 200 mcg. of GTF chromium with every meal.

DEFICIENCY SYMPTOMS: Low blood sugar, glucose

intolerance (especially in diabetics), the probability of arteriosclerosis and perhaps a lack of amino acid metabolism.

ZINC:

Zinc is a trace mineral very much needed in the body to maintain good health. Zinc is needed for the brain, the retina of the eye and the visual process. It is needed for normal function of the prostate gland and to prevent its enlargement. Zinc, along with pumpkin seeds, is a great aid to reducing an enlarged prostate gland. It is also essential in the synthesization of nucleic acids, and aids in the metabolism of vitamins, especially the B complex factors. It is found in the enzymes that aid in digestion and metabolism.

DEFICIENCY SYMPTOMS: Prostate trouble, lack of sexual maturity, delayed wound healing, a possible contributing factor to diabetes, fatigue, possible loss of smell and taste and possible susceptibility to infection.

SELENIUM:

Another trace mineral very important to the maintenance of good health; when needed, the usual dosage of selenium is 50 mcg. It is an anti-oxidant like Vitamin E, but is many times more potent. When taking Vitamin E, one tablet of 50 mcg. of selenium should be included. When conception is impossible, husband and wife should both be taking Vitamin E and selenium. After conception, the wife should continue taking these throughout the pregnancy and lactation periods. When women abort - having miscarriages - they would do well to try taking two aqua-E complex, 400 I.U., and one selenium of 50 mcg. at each meal.

SULPHUR:

Sulphur is found in every cell of the body. Since it is found in most protein, the possibility of having a deficiency of sulphur is quite remote. The cells that contain most of the sulphur are those of the skin, hair, and joints. Thus, it is involved in collagen formation. "Most of man's sulfur must come from food protein which provides four sulfur-containing amino acids - cysteine, cystine, taurine and methionine. The first three can be made in the body as long as adequate amounts of the essential amino acid methionine are contained in man's diet. Elemental sulfur will also allow the building of the first three amino acids by the tissues of the body!" The lacto-ova vegetarian will probably get enough sulphur, particularly from the eggs, which are used in cooking and baking, but the strict vegetarian who does not use eggs or dairy products may become deficient in sulphur. If this occurs, have your physician give you a prescription for the drugstore to fill number one capsules with flowers of sulphur. The dosage should be one capsule with each meal. It might surprise some of you ladies to know that the tears that run from the aroma of the onions that you slice are caused by nothing more than

organic sulphur compound. The garlic which you love to eat but avoid because you are afraid of other people smelling your breath, is odorous from nothing more than organic sulphur compound.

VANADIUM:

Vanadium is another trace mineral element essential to good health. In the food processing factories, where they remove much of the nutrients, such as in the manufacturing of flour, cereals, sugar, and etc., vanadium is lost and is never restored. They may put back a portion of the nutrients but they never fully put back everything that has been taken out. Vanadium is needed to help lower serum cholesterol, for nitrogen-fixing bacteria in the soil, and for normal growth.

MOLYBDENUM:

Molybdenum is another trace mineral element necessary for the maintenance of good health. Like vanadium, it is needed for nitrogen-fixing bacteria in the soil. This mineral is found in all tissues of the body. Some of the enzymes are also dependent upon molybdenum. Like vanadium, it is lost in the food processing of most cereals, white flour, white rice, white sugar, etc. Since this trace mineral element is necessary to good health, what is happening to people who are eating empty calories and junk foods? The answer is simply that they are bringing disease upon themselves and shortening their lives. If the soil contains this mineral element then the dark green vegetables, such as collards, kale, mustard greens, turnip greens, and escarole will have a plentiful supply of molybdenum. It assists in the metabolization of iron which has been stored in the liver.

NICKEL:

This is another in the trace mineral elements, but the role it plays in human nutrition at the present time is not clear. It is concentrated in the DNA and RNA and may contribute to the stabilization of nucleic acids. It is reported that it activates some of the enzyme systems. The main source of nickel is in vegetables. Warning: High concentrations of nickel can be very toxic and dangerous. For this reason, it should never be taken as a supplement to the diet.

TIN:

This trace mineral element is found in all vegetation growing on soil that is not depleted of tin. We know that it is needed for the growth factor, but little more than that is known. More studies and experiments are needed to establish more facts. By itself, tin does not work in the body. However, it is affected by some of the trace minerals such as iron and copper. Warning: Tin should never be taken internally as a supplement because high levels of tin can retard growth and cause anemia when iron is not present.

SILICON:

Silicon is another trace mineral element. The American Society for Experimental Biology in their convention of 1973 scientists reported that silicon was necessary for the maintenance of good health. It is needed for normal growth, for bone formation and for collagen, which is

responsible for connective tissue. Since 28% of the earth's surface is made up of silicon there is unlikely to be any deficiency in man. However, for post-operative patients, bone and nail deficiencies, silicon can be purchased in tablet form.

ALUMINUM, CADMIUM, LEAD, AND MERCURY:

All four of these are trace minerals, but are poisonous to the human body and therefore should never be considered as a necessity to good health because they are not. This is one reason why people should never use aluminum in their cooking utensils unless the aluminum is coated with Silverstone which prevents the aluminum poisoning from coming through to the food.

MINIMUM DAILY AMOUNTS THAT SHOULD BE PRESENT IN A GOOD FOOD SUPPLEMENT

Calcium	1000 mg
Magnesium	40 mg
Potassium	99 mg
Phosphorus	150 mg
Iron	20 mg
Iodine	.225 mg
Copper	2 mg
Zinc	20 mg
Chromium	.5 mg
Manganese	20 mg
Selenium	.20 mcg4