Every cell is a storage battery with an electrical charge of 40 to 90 millivolts. All body cells are surrounded by extracellular fluids; this matrix is made up of water and crystalline mineral structures which resonate and help regulate all cellular activity via electrochemical signaling.

The cell membrane which surrounds the cell communicates the electrochemical signals from the extracellular (outside the cell) matrix to the intracellular (inside the cell) environment which sets up a resonance between the intracellular environment and the extracellular matrix. Cell dysfunction is the product of a breakdown in this resonance.

Ineffective electrochemical signaling at this level, and thus in the cell’s electrical environment, disturbs cell behavior and, over time, may lead to mutation in DNA encoding and subsequent malignant change.

Clearly, this electrochemical activity mediated by the cell membrane is crucial not only for the maintenance of health but in its restoration in the event of disease.

Calcium, magnesium, potassium and sodium are key players in this critical electrochemical interplay which is one of the main reasons why these minerals should form the nucleus of any nutritional supplementation program.

Before beginning an in-depth look at each mineral, it should be understood that these four minerals are fully interdependent and cannot function properly in isolation. The following insights illustrate this:

1) Hypomagnesia (low magnesium) is the most common cause of hypocalcemia (low calcium) in hospitalized patients. Chronic magnesium depletion suppresses the secretion of parathyroid hormone which is necessary for the maintenance of normal calcium blood-levels.

2) Deficiencies of magnesium are closely related to abnormal calcium metabolism. In diabetes, magnesium deficiency is associated with both low calcium and low potassium.

3) Low potassium frequently occurs as a result of magnesium deficiency and administration of potassium alone may be insufficient to correct potassium deficiency.
CALCIUM, MAGNESIUM, POTASSIUM And SODIUM
Physical, Emotional and Nutritional Perspectives
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unless magnesium supplementation occurs simultaneously. Magnesium modulates one of the primary potassium transport systems in and out of the cell. Adequate magnesium stores are necessary to prevent the leaking-out of potassium through potassium channels in the cell membrane. The role of magnesium in maintaining the intracellular potassium stores in heart muscle and other cardiac cells is crucial. Potassium loss due to low magnesium levels results in alteration of the electrical potential of heart muscle cell membranes, making them more excitable and prone to arrhythmia.

4) Calcium is a direct antagonist to magnesium, so much so that it is used intravenously to reverse the complications of magnesium overload due to kidney failure.

5) Magnesium depletion may also contribute to sodium deficiency.

6) In heart action, calcium facilitates contraction while magnesium facilitates the relaxation required to allow for subsequent contraction (thus creating the characteristic pumping action).

7) Calcium competes with magnesium for a common transport system for uptake from the intestine into the blood. An excess or deficiency of one of these minerals inversely affects the absorption of the other.

8) When magnesium-deficiency results in inappropriate calcium balance in the tissues, the so-called sodium/potassium pump (i.e., mechanism by which sodium and potassium move in and out of the cell) is disrupted.

CALCIUM

Physical Functions

Calcium is the most abundant mineral (and 5th most abundant substance) in the body with about 99% occurring in the bones. Calcium constitutes about 1.5% - 2% of total body weight. Calcium’s role in bone and tooth development and maintenance are well known. In addition to lending structural integrity to skeletal tissue, calcium is crucial for proper nerve transmission, primarily through its role in the release of neurotransmitters. If serum calcium levels fall below a certain threshold, the nerves become hypersensitive.

• Lacking sufficient calcium ions, the muscle fibers remain motionless and do not glide and mesh together. Thus, the muscle cannot contract, or, once contracted, it will not relax, causing the muscle to cramp.

• In regard to heart muscle function: calcium stimulates contraction; magnesium supports relaxation while sodium and potassium help to generate and regulate rhythmic electrical impulses.
• Heartbeat is controlled by an electrical center called the AV node: a mass of specialized tissue located in the upper right chamber of the heart, and calcium is involved in the transmission of impulses in this center.

• Calcium is required for the activation of ATP: a major energy-carrying substance in the body which serves as an energy source for muscle-contraction.

• Calcium plays a vital role in the regulation of the cellular milieu. Small amounts of calcium occur in both the intracellular (i.e., inside the cell) fluids as well as the extracellular fluids which bathe the cells.

• Calcium helps to regulate ion (atom or group of atoms with an electrical charge) and nutrient-transport into and out of the cell.

• Calcium has a calming effect upon the nerves due to its regulation of the movement of sodium and potassium across nerve-cell membranes. When calcium ions are increased in the fluids around the nerve cell, they decrease the number of sodium ions present, thus, lowering electrical reactivity.

• Brain cells use their cell membranes as mediums for the production of energy and the electrical currents needed in the nerve transmission that facilitates brain cell communication.

• Calcium is necessary for the cell division required for growth and repair. Also, it is an integral component of the extracellular cement called “ground substance” which binds the cells.

• Calcium, being a component of platelets (the clotting cells in the blood) plays an important role in blood-clotting.

• Calcium is also a key digestive factor. It activates starch-splitting enzymes found in saliva, pancreatic secretions and fat-digesting enzymes.

• Calcium is an important blood-buffer, helping in the maintenance of optimal pH. Also, it is essential for normal action of the sympathetic (fight or flight) nervous system, and so, it is a key player in all stress responses.

• Although calcium channel-blocking drugs are used to reduce high blood pressure and the risk of coronary arterial spasm, normal calcium nutrition is not the culprit; rather, it is abnormal calcium metabolism. In fact, calcium supplementation has been shown to lower blood pressure by positively influencing certain electrolyte and central nervous system mechanisms.

• Studies have shown that reduced levels of calcium during the teenage years (the time of proliferation of mammary gland cells) can increase the risk of breast cancer. Calcium may also play a role in protecting against colon cancer.
Calcium-Deficiency Symptoms: nervousness and other nervous disorders; apprehension; insomnia; fatigue; feeling of let-down at 3 p.m.; weakness when ascending stairs or walking uphill; impaired growth; intolerance of tight clothing or hats; tetany; hypothyroidism; swollen glands; cardiac arrhythmia; heart palpitations; slow pulse rates; tooth decay; bronchial spasms; digestive disorders; spastic colon; irritable bowel syndrome; desire for sweets; menstrual difficulties; profuse menses; uterine spasms; excessive irritability of nerves and muscles; muscle cramps (especially leg cramps at night); bone defects (including osteoporosis, rickets and osteomalacia); joint pains; arthritis; proneness to sprains and strains; numbness and tingling of the extremities; profuse perspiration; dryness and chapped skin in winter, especially of the soles of the feet; sensitivity to cold and dampness.

Notable Food Sources of Calcium: sesame seeds; sea vegetables (e.g., kelp, kombu); leafy greens (including collard greens, kale, turnip greens, mustard greens cabbage); nuts: almonds, filberts, Brazil and pistachio; sunflower seeds; soybeans; oats; chickpeas; mung beans; red beans; parsley; water cress; beet greens; broccoli; radish; dandelion greens; cabbage; soybeans; watercress; citrus fruits; salmon; sardines; nutritional yeast; unsulphured blackstrap molasses.

Important Nutritional Co-factors:
Adequate healthful dietary fats such as unrefined coconut oil, olive oil, fish oil and hemp oil; adequate protein; sufficient hydrochloric acid; vitamin A, vitamin C, vitamin D; boron; magnesium; phosphorus; sodium.

Emotional Themes and Feelings Associated With Calcium

• The main theme is one’s need for protection, stability and security. (Calcium is the major mineral component of the protective shells of mollusks, crabs and the exoskeleton (external skeleton) of insects. Their calcium-rich rib cage is designed to protect the vital organs of the chest and upper abdomen.)

• Like an oyster, withdraws and build-ups a protective layer around herself.

• Strives to get protection from outside or develop it herself.

• Anything that threatens her stability and security causes fear.

• Sensitive to potential threats within her vicinity such as new neighbors, the dog next door, the illness that goes around.

• Fear of loss, poverty, the future and the possibility of things going wrong, even without any clear justification for such worries.

• Increased sensitivity to criticism and what others will think of her.
• Uncertain about themselves and constantly compare themselves with others, fearing that they will be found lacking or less qualified.

• Has a strong bond to the home, a bastion of safety comparable to the oyster’s calcium-rich shell. They are bolder and more assertive at home than in the outside world where they feel vulnerable and uncertain.

• May be hesitant to leave the safe nest of their birth family, fearing that married life will not provide the same sense of security.

• Increased sensitivity to news stories about cruelties or tragedies.

• Dreams may reflect anxiety about potential threats, including dreams of: observing a murder; wild animals such as snakes; intrusive people or events which disturb their domestic safe haven.

MAGNESIUM

Physical Functions

Magnesium is in its highest concentrations in tissue with high metabolic activity such as the brain, heart, kidneys and liver. Other than potassium, magnesium is the most abundant cation (positively charged ion) in soft tissue, and its deficiency leads to tissue breakdown and destruction.

The refining of grains may result in the loss of more than 75% of original magnesium-content. U.S. government surveys found that the typical American diet provides less than half of the recommended daily amount of magnesium. Some authorities estimate that 80% of the population is magnesium-deficient.

Magnesium is primarily an intracellular mineral. Standard blood tests cannot detect any but the most severe cases of deficiency, because only 1% of body magnesium occurs outside the cells, and these tests do not measure the intracellular content. Substantial intracellular depletion can exist when plasma magnesium levels are normal or even elevated.

• Activates pathways involved in protein and carbohydrate metabolism and is involved in the function and maintenance of DNA.

• Helps to regulate the electrical reactivity of cell membranes, and thus, the flow of vital nutrients and waste products across the structure.

• Necessary for the normal energy-production required for the production of ATP.
• Crucial in relieving chronic fatigue, especially if it occurs in conjunction with depression, anxiety, insomnia or muscle cramps.

• Magnesium is also involved in the synthesis of lipids and proteins.

• Plays an important role in muscle relaxation and neuromuscular transmission.

• Prevents tooth decay by binding the calcium in tooth enamel.

• Aids detoxification by assisting in the removal of excess ammonia (by-product of protein digestion) from the body.

• A natural tranquilizer that ameliorates erratic nervous system activity.

• Combats stress through reduction of muscular tension via relaxation of skeletal muscles.

• Magnesium deficiency may contribute to irritability, agitation and panic attacks.

• Helps to prevent spasms of the gastrointestinal tract, arteries (including the coronary arteries), fallopian tubes (a cause of infertility) and bronchial spasm (as occurs in asthma).

• Low magnesium levels may result in coronary arterial spasm and sudden-death heart disease. The magnesium-content of heart muscle has been shown to be low in those who die of “sudden-death.”

• It is an effective vasodilator, has an anti-arrhythmic effect on the heart muscle and limits platelet aggregation (i.e., clumping together of clotting cells).

• Can help reduce the build-up of unwanted calcium deposits in arteries and heart valves.

• May exert an anticancer effect. Magnesium-deficiency has been shown to increase cancer susceptibility.

• Chemotherapy depletes magnesium stores and, in so doing, may actually stimulate the development of malignancies.

• Helps to lower blood pressure in pregnant women with preeclampsia and is also an anticonvulsant in eclampsia (i.e., toxemia of pregnancy).

• Deficiency may be indicated by abnormal menstrual symptoms, including: cramping; fatigue; depression; water retention; irritability.

• Magnesium-deficiency is common in long-standing or under-controlled diabetics and has been used for decades to treat alcoholics during withdrawal.
• Magnesium excretion is increased by the use of alcohol, caffeine, refined sugar, birth control pills and diuretics.

• Chemical sensitivities cannot be resolved until nutrient deficiencies are rectified; thus, magnesium-deficiency is especially crucial in this regard.

Magnesium-Deficiency Symptoms:
apprehensiveness; personality changes; confusion; anxiety; alcoholism; disorientation; psychosomatic illnesses; insomnia; hypothyroidism; adrenal gland fatigue and weakness; lack of coordination; obesity; fluid retention; proneness to motion sickness; muscle-twitch; tremors; weakness; bizarre muscle movements of the face and eye muscles; hair loss; swollen gums; tension in the neck and shoulders; weakness of the heart muscle; angina pectoris; proneness to blood clots in the arteries; white blood cell disorders; chronic sore throat; hay fever; asthma; gastrointestinal disorders; nausea; constipation; colitis; intestinal parasites; liver weakness; gallbladder disorders, including gallstones; PMS; amenorrhea (absence of menstrual period) tetany; muscle cramps; skin lesions; warts.

Notable Food Sources of Magnesium:
kelp; nuts: almonds, cashews, Brazil, walnuts, filberts, pistachio and pecans; sesame seeds; Lima beans; dried peas; red beans; soybeans; millet; wheat; brown rice; rye; lentils; seafood; dark green vegetables in general; kale; spinach; beet greens; coconut; figs; dried banana.

Important Nutritional Co-factors:
Adequate healthful dietary fats (see Calcium above) and protein; calcium; B-complex vitamins; vitamin C; vitamin D; adequate hydrochloric acid and potassium.

Emotional Themes and Feelings Associated With Magnesium

• Mood swings; oscillates between polarities.

• Repressed internal anxiety and insecurity.

• Emotional desire for strong parental nurturing and protection.

• Feelings of abandonment, of being forsaken, vulnerable and alone.

• May be an important mineral supplement for orphans and children of divorced parents.

• May be a history of being neglected in some way by their parents.

• Feeling of being unwanted in the very early years of life.

• Obsessive empathy; however may oscillate between the two polar extremes of self-centeredness and pathological selflessness.
• Fear of loss of affection and nurturing.

• Tendency toward pacifism and aversion to aggression; cannot stand quarrels and violence. However, may alternate between being averse to aggression and other times being aggressive and ill-tempered.

• Great sensitivity to pain on both the physical and emotional levels.

• Dreams of: falling; water; children; dead relatives; death of relatives; in many dreams there is a feeling of aloneness, of having to face a problem alone or of being left behind.

• Sometimes those who need magnesium may claim to not dream at all.

• Whether she does not recall dreaming or is deluged by nonstop dreams, she often wakes up feeling unrefreshed.

POTASSIUM

Physical Functions

Potassium is the primary positive-charged mineral ion in the internal fluids of the cell. Over 90% of total body potassium occurs in these intracellular fluids (30-times the concentration found outside the cells in the extracellular spaces). The potassium to sodium ratio inside the cell is 10-to-1, while outside, it is 1-to-28.

As with magnesium, standard blood tests do not give an accurate assessment of organ-potassium status. The blood-serum which is analyzed contains approximately 4 to 5 mg./100 ml. potassium while the red blood cells, which are not assessed, contain 420 mg./100 ml.

Although fruits and vegetables contain plentiful amounts of potassium, the mineral is almost entirely lost when these foods are canned or frozen because it is one of the most water-soluble of all elements.

• Potassium-deficiency allows more sodium to enter the cells, attracting water into the cells and producing cell edema and damage.

• In nerve cells, the sodium/potassium pump mechanism generates an electrical charge that allows nerve impulses to progress.

• The sodium/potassium pump also helps to generate muscle-contractions and regulates heartbeat.
• Potassium-deficiency may cause loss of coordination, irregular heartbeat and even heart-paralysis.

• Plays a major role in maintaining cellular integrity, water balance, carbohydrate metabolism and cellular protein production.

• Also essential for nerve transmission, it activates enzymes in the body’s utilization of amino acids and is a factor in bone-calcification and normal growth.

• Active in the conversion of glucose to glycogen that is stored in the liver as a reserve to meet future energy needs.

• Along with sodium, it helps to regulate acid/base balance in the blood and tissues.

• Essential for the immune system’s normal function, it is a primary factor in the prevention and treatment of cancer.

• Transports oxygen into the cells and maintains the alkalinity of cellular fluids.

• Assists in keeping the skin healthy and stimulates kidneys to eliminate toxic waste.

• Crucial to cardiovascular nerve function, it is lost when an individual is given prescription diuretics to help control edema or hypertension.

• May be useful when dealing with hypertension induced by high-sodium intake.

• Potassium-depletion can lead to vasoconstriction (narrowing of blood vessels).

• During and after diarrhea, potassium replacement may be needed to compensate for losses in the stool, especially when abnormal mucus is present.

• May also be required in dehydration states.

• Excess salt- or sugar-intake reduces potassium levels.

• In addition to diuretics, various drugs (including laxatives, aspirin, digitalis and cortisone) have a potassium-depleting effect.

• Some drugs (including potassium-sparing diuretics, beta-blockers, heparin and non-steroidal anti-inflammatory drugs) may impair potassium excretion and cause abnormal retention of potassium.

• Kidneys filter-out excess potassium. Patients with serious kidney disease or who are otherwise at risk of kidney failure, should not be given potassium supplementation, because of the potential of dangerously high levels of potassium in the blood.
Potassium-Deficiency Symptoms:

depression; mood swings; nervous disorders; fatigue due to mental strain; alcoholism; insomnia; overactive adrenal glands; neuralgia; obesity related to hypothyroidism and/or water-retention; cardiac arrhythmias; angina pectoris; electrolyte imbalance (sometimes related to diarrhea); congestive heart failure; slow or irregular heartbeat; arteriosclerosis; diminished gastrointestinal tone; liver weakness; gallbladder disorders, including gallstones; PMS; muscle weakness; rheumatism; lumbago; sciatica; arthritis; joint pain; dry skin; acne; slower reflexes. Among deficiency symptoms, fatigue is the most common. In severe potassium-deficiency, there may be: profound muscle debility; bone fragility; dangerously (potentially fatal) decreased heart rate.

Notable Food Sources of Potassium: kelp; soybeans; lima beans; mung beans; dried peas; chickpeas; lentils; whole grains in general; brown rice; rice bran; dried apricots; dried peaches; raisins; sunflower seeds; sesame seeds; chestnuts; almonds; parsley; Brazil nuts; pistachio nuts; filberts; pecans; dates; figs; yams; beets; spinach; potatoes; winter squash; avocados; pears; apples; bananas; prunes; garlic; fish.

Important Nutritional Co-factors:
Calcium, magnesium, sodium, B-complex vitamins, vitamin C

Emotional Themes of Potassium

• Theme of forming group relationships; needs a family to feel complete.

• Feels tremendous anxiety without a group or family with which to relate; the harmony and integrity of the family or group is a chief concern.

• Anything that threatens the integrity of their group makes an individual with a strong fundamental need for potassium anxious and fearful, and they can become quite aggressive in their efforts to preserve it. This aggressiveness may lead to intragroup tensions and quarrels.

• Wish to raise a family, need and seek the support of other family members and may remain dependent upon relationships within their birth-family even after marriage takes them away from the area.

• This desire for family or group interaction may encourage feelings of isolation, sentimentality and melancholy.

• Group interactions are a means of validation of self-worth without which they are unable to sustain emotional stability and the momentum of their personal growth.

• “Empty-nest syndrome” (feelings of depression and disconnectedness experienced by a parent whose children have grown and left the home) may be a symptom of potassium need.
• As a reaction to this deep-seated instability, may compensate with an extraordinary level of conscientiousness, reliability and dedication to completion of tasks.

• Prefers established routine to extemporaneousness.

• Have to exert a great deal of control over crucial aspects of their lives, including their emotions.

• Tendency to “hold-in” personal concerns and rigidly resist transition; this may express itself on the physical level as constipation, difficult labor, edema (especially of the ankles and eyelids) and psychosomatically induced stomach pains, ulcers and heart troubles.

SODIUM

Physical Functions

Sodium is found in every cell of the body, but its most concentrated presence is in the extracellular fluids which surround the cells. Sodium often evokes negative associations because of the well-publicized pitfalls of “the intake of excess salt” (i.e., sodium chloride: table salt). However, sodium is just as essential for human life as calcium, magnesium or potassium.

**Adequate sodium is crucial for:**

• Regulation of the body’s fluid volume

• Maintenance of acid-base balance

• Carbon dioxide transport

• Muscle contraction

• Nerve transmission

• Uptake of amino acids from the gut and their subsequent infiltration into body cells.

Sodium keeps the other blood-minerals soluble so they do not settle-out and form abnormal deposits. Also, salt improves digestion by stimulating the taste buds and salivary glands.

Sodium chloride is one of the cell salts used in Dr. Schuessler’s method of homeopathic treatment. A cell salt is a mineral compound formed by electrical attraction of a negatively charged atom and a positively charged one. In this case, sodium atoms are positively charged while chloride atoms are negatively charged; when chemically combined, the compound: sodium chloride or what is commonly known as table salt, is formed.
Upon analysis of human ash, Schuessler discovered that 12 mineral-salt combinations are predominant in tissues. These salts do not occur haphazardly, but have specific affinities for various tissues of the human anatomy. Some are more closely associated with bone, others with nerves, blood, muscles, etc. Since tissues are aggregations of similar cells which unite to perform a function, these 12 mineral salts were coined “cell salts.”

Schuessler strongly believed that material of which the body is built must also be the material required to maintain its structural integrity and functional efficiency. Thus, he became architect of a system wherein the 12 dominant constituent mineral salts contained within the human body are used as remedies in treatment of disorder and disease. Schuessler’s method has been used successfully for close to 200 years, and its popularity continues today.

Sodium chloride is a constituent of every liquid and solid part of the body. According to Schuessler, sodium chloride regulates moisture-level in the tissues. Accordingly, abnormal increase or decrease of sodium chloride causes moisture imbalance, manifesting as a decrease of secretions in one part of the body and an increase in another. Therefore, any symptom of excess moisture (e.g., diarrhea) or dryness (e.g., dry skin) may be related in part to a sodium deficiency.

Perhaps sodium’s interaction with potassium is its most crucial mineral-relationship. (About 60% of body-sodium is extracellular with only 10% occurring inside the cells. The remaining 30% is found in the bones.) On the other hand, over 90% of all body-potassium is found inside the cells. Along with potassium, sodium helps to regulate the fluid balance between the intracellular and extracellular environments. These two minerals also help to regulate acid/alkaline balance, one of the most crucial aspects of health maintenance.

The maintenance of an alkaline pH is critical to cellular health and longevity. Alkaline cellular pH is required for adequate toxin-excretion, nutrient-assimilation and normal regulation of cellular processes. The activity of cellular enzymes which sustain normal metabolic activity is profoundly influenced by even small changes in pH. All disease states invariably feature abnormal pH shifts.

Sodium and potassium are two of the body’s three main electrolytes (chlorine is the third), meaning that they carry a tiny electrical charge, and so, have electrical potential. The exchange of sodium and potassium across cell membranes (referred to as the sodium/potassium pump) helps to create an electrical charge that facilitates the conduction of nerve impulses and muscle-contraction, and both are elemental to continued heart function.

Sodium is also required for the stomach’s production of hydrochloric acid which is necessary for protein digestion and the assimilation of many vital nutrients. Hypochlorhydria (low stomach acid) is an almost universal factor in many kinds of chronic disease, especially among older individuals.
Most natural foods contain small quantities of sodium. In the modern Western diet, only 5% of sodium is naturally occurring while 45% derives from industrial processing and 50% from food, preparation and seasoning. Because sodium does not occur in large quantities in natural foods, the body’s physiological mechanisms are more concerned with sodium conservation than sodium excretion.

Some investigators feel that the lack of evolutionary adaptation to the present day high-sodium diet is a factor in many of the disease scourges of modern times, including cancer and cardiovascular disease. Since the Stone Age, the potassium: sodium ratio in Western diet has been reduced by a factor of 20. Certain primitive cultures still in existence have potassium: sodium ratios 100 to 200 times greater than ours. Hence, sodium in and of itself is not a negative influence, but rather, an abnormally high sodium : potassium ratio generated by a reckless diet of highly salted, processed foods with few fresh fruits and vegetables and other unseasoned natural foods.

Researchers have found that neither sodium nor potassium levels alone correlate with blood-pressure, but rather, the sodium : potassium ratio. So long as the natural balance of these two minerals is maintained, sodium is not a negative influence in this regard. Over the years, a plethora of salt in the Western diet can weaken the kidneys and reduce their sodium-clearance capacity, leading to destructive accumulation of salt in the tissues. In addition to table salt, sodium occurs in baking soda, MSG, soy sauce, sodium nitrate, propionate preservatives and softened water (sodium is used to replace naturally occurring calcium and magnesium in hard water).

Undeniably in this era, more problems are caused by excess- rather than low sodium-intake. Excessive sodium intake, over time, contributes to many disorders, including hypertension; PMS; edema; congestive heart failure; kidney failure; tremors; weight gain; irritability.

There is a link between excess sodium intake and increased calcium spillage in the urine which leads to osteoporotic bone loss. The kidneys’ clearance of superfluous sodium from the blood increases calcium- clearance as well.

Nevertheless, for various reasons (including highly restrictive low-salt regimens and adrenal weakness/fatigue: commonly experienced today), sodium deficiencies are not uncommon in today’s world of intense, unrelenting stress. Sodium-metabolism is mediated by aldosterone, an adrenal cortex hormone which prevents sodium over-excretion and sodium-deficiency.

As mentioned above, natural foods are generally low-sodium foods. Conceivably, those with adrenal insufficiency who also avoid adding salt to their food because they consider it to be a “bad” food, may be subject to sodium-deficiency, especially if chronic symptoms such as loose and frequent stools and night sweats are a factor (sodium is lost via vomiting, diarrhea and sweating).
Any nutritional substance used to excess is “bad,” and salt is no exception. However, this does not infer that salt in physiological quantities is inherently harmful. On the contrary, extreme salt-restriction may have a negative impact upon health. As plant foods contain 3- to 4-times more potassium than flesh foods, there is an increased need for sodium counterbalancing in vegetarian diets.

It has been found that only 40% to 50% of the hypertensive population (i.e., those with high blood-pressure) and 30% of the general public are salt-sensitive, and thus, they may benefit from salt-restriction. Therefore, more than 1/2 of hypertensives and 2/3 of the general population are not adversely affected by judicious salt-intake, and may, in fact, be harmed by unwarranted salt-restriction.

In recent years, the incidence of chronic fatigue has become epidemic. In many cases, there is a relationship between hypotension (low blood-pressure) and Chronic Fatigue Syndrome. Increased salt-ingestion increases blood volume, and so, raises blood-pressure. A reduced sodium-intake is likely to worsen symptoms of hypotension.

Tinnitus (ringing in the ears) may also be exacerbated by a low sodium : potassium balance as electrolyte imbalances affect the inner ear.

**Note:** The point of the preceding discussion is not to grant license for the eating of overly salted foods, a clearly detrimental practice. Rather, the purpose is to highlight the risk of going to the extreme opposite of the salt-intake spectrum. Salt is not devoid of nutritional value as many assume, but rather, a source of vital sodium. Unrefined sea salt, when used conservatively in accordance with need, is a distinctly positive dietary influence. However, the issue of salt-intake involves quality as well as quantity. The refined table salt sold in supermarkets and used in processed foods is almost 100% sodium chloride. Good quality sea salt must include all the various minerals found in sea water. Refined salt is harmful to the body; instead of being a full-spectrum mineral source, it has been reduced to nothing more than a nearly useless flavoring agent.

Only unrefined sea salt or traditional natural foods such as tamari, miso paste or umeboshi plums (made with organic ingredients and unrefined sea salt) should be used as seasonings. Common purified table salt has no place in the human diet. In addition, foods rich in natural sodium should be emphasized in the dietary agenda of vegetarians, especially those manifesting hypotension, chronic fatigue or other symptoms possibly linked, in part, to low sodium-intake.

**Sodium-Deficiency Symptoms:**
apathy; impaired concentration; emotional instability; depression; lethargy; memory impairment; social withdrawal; unrefreshing sleep, so the individual feels tired in the morning upon awakening; constant and excessive desire for sleep; anorexia; physical and/or mental letdown at 11 a.m.; mapped tongue; tongue that clean and shiny with frothy saliva along its sides, or broad, pallid and puffy with a pasty coating; underweight; chilliness; food sensitivities to various grains; abdominal cramps;
dizziness; fatigue; flatulence; headaches; headaches from sun exposure; low blood-pressure; infections; lethargy; muscular weakness; weight-loss.

**Notable Food Sources of Sodium:** fish; sesame seeds; kelp and other sea vegetables; fowl; brown eggs; olives; spinach; chard; beets and beet greens; celery; kale; water cress; turnip; carrot; parsley; artichoke; collard greens.

**Important Nutritional Co-factors:**
Calcium, magnesium, potassium, B-complex vitamins, vitamin C

**Emotional Themes and Feeling Associated with Sodium**

• The need to form or sustain a satisfying one-to-one relationship.

• Feels isolated and becomes withdrawn when lacking a strong, satisfying relationship.

• Any form of rejection causes hurt and disappointment.

• Fear of: being hurt; fear of being alone; feelings of low self-esteem; feelings of insecurity.

• Sensitive, closed people who fortify themselves against potential rejection.

• Feels alienated from the external world, believing that he must shoulder his burden while walled-off in solitude.

• Melancholy and pessimistic feelings, believing that all will never be well again when loss or rejection occurs.

• Becomes averse to company and consolation, and shuts himself off from others after having experienced a loss or rejection.

• Drawn to sad music.