Dr. Olree’s ‘Grand Unified Mineral Complex’ was designed to provide the greatest impact on human health with the most important minerals needed for cells based on: Gravity, Magnetism, Strong Electrical Forces, and Weak Electrical Forces.

The forces of nature combined with chemical rescue farming methods have depleted the mineral content of soil in United States. Consequently, food itself lacks its full mineral potential. The ‘Grand Unified Mineral Complex’ is comprised of: Boron, Iodine, Magnesium, Selenium, & Vitamin D.

(Please note that there will be small changes in the product as needed to improve genetic outcome)
Vitamin D-3

Vitamin D is a fat-soluble vitamin that is essential for maintaining normal calcium metabolism. Vitamin D3 (cholecalciferol) can be synthesized by humans in the skin upon exposure to ultraviolet-B (UVB) radiation from sunlight, or it can be obtained from the diet. Plants synthesize ergosterol, which is converted to vitamin D2 (ergocalciferol) by ultraviolet light. When exposure to UVB radiation is insufficient for the synthesis of adequate amounts of vitamin D3 in the skin, adequate intake of vitamin D from the diet is essential for health.
Vitamin D itself is biologically inactive, and it must be metabolized to its biologically active forms. After it is consumed in the diet or synthesized in the epidermis of skin, vitamin D enters the circulation and is transported to the liver. In the liver, vitamin D is hydroxylated to form 25-hydroxyvitamin D [25(OH)D], the major circulating form of vitamin D. Increased exposure to sunlight or increased dietary intake of vitamin D increases serum levels of 25(OH)D, making the serum 25(OH)D concentration a useful indicator of vitamin D nutritional status. In the kidney, the 25(OH)D3-1-hydroxylase enzyme catalyzes a second hydroxylation of 25(OH)D, resulting in the formation of 1alpha,25-dihydroxyvitamin D [1,25(OH)2D]—the most potent form of vitamin D. Most of the physiological effects of vitamin D in the body are related to the activity of 1,25(OH)2D.

Mechanisms of Action: Calcium balance, cell differentiation, immunity, insulin secretion, with blood pressure regulation.

Deficiencies are – Rickets, Osteomalacia, Muscle Weakness and Pain

Risk Factors for Vitamin D Deficiency would be; exclusively breast-fed infants (mother is lacking), dark skin, Aging, covering all exposed skin or using sunscreen whenever outside, fat malabsorption syndromes, Inflammatory bowel disease, with obesity Disease Prevention.

Deficiency Problems; osteoporosis, cancer (Colorectal Cancer, Breast Cancer, Prostate Cancer), autoimmune Diseases (Insulin-dependent diabetes mellitus, multiple sclerosis, and rheumatoid arthritis), and hypertension (High Blood Pressure).

Sources of Vitamin D - Sunlight - Solar ultraviolet-B radiation (wavelengths of 290 to 315 nanometers) stimulates the production of vitamin D3 in the epidermis of the skin. People with dark-colored skin synthesize markedly less vitamin D on exposure to sunlight than those with light-colored skin. Additionally, the elderly have diminished capacity to synthesize vitamin D from sunlight exposure and frequently use sunscreen or protective clothing in order to prevent skin cancer and sun damage. The application of sunscreen with an SPF factor of 8 reduces production of vitamin D by 95%. In latitudes around 40 degrees north or 40 degrees south (Boston is 42 degrees north), there is insufficient UVB radiation available for vitamin D synthesis from November to early March. Ten degrees farther north or south (Edmonton, Canada) the “vitamin D winter” extends from mid-October to mid-March.

Supplements - Vitamin D supplements available without a prescription contain cholecalciferol (vitamin D3), which is more potent than ergocalciferol (vitamin D2) and should be emulsified. (Contact Dr. Olree for sources)

Safety - Get a blood test for vitamin D-3 and know your numbers.

Toxicity - Vitamin D toxicity (hypervitaminosis D) induces abnormally high serum calcium levels. Hypercalcemia has been observed following daily doses of greater than 50,000 IU of vitamin D. Research published since 1997 suggests that the UL for adults is likely overly conservative and that vitamin D toxicity is very unlikely in healthy people at intake levels lower than 10,000 IU/day. Vitamin D toxicity has not been observed to result from sun exposure.
BORON

Boron is a light trace element that is turning out to be essential to human health and behavior. For many centuries healers gave people who were excited the “sedative salt” boric acid, another compound containing boron. Today it has been scientifically demonstrated that boron is important to brain function, especially in enhancing memory, cognitive function, and hand-eye coordination. Evidence continues to mount that boron may reduce either the symptoms or incidence of arthritis. Although the connection between arthritis and boron was first discovered in sheep and chickens, researchers have found a curious association between the amount of boron in the soil and drinking water, and the incidence of arthritis in a population. The only form of boron the body can handle with changing the shape of the molecule is Calcium Boro Gluconate. (Contact Dr. Olree for more information)

In the most arid areas of the world, the incidence of arthritis tends to be dramatically lower than in the rain-laden areas. Arid areas have been found to have the highest concentrations of boron in the drinking water and soil. This is most interesting since it is well known that boron can get more readily leached out of the soil in wet climates. This is one reason most good farmers and ranchers check for the level of boron in their soil. If boron concentrations are low, they may give their crops or livestock supplemental feed containing this important trace element.
In post-menopausal females who are magnesium deficient, it has been scientifically demonstrated that 3 milligrams of boron a day added to the diet resulted in improvements in both calcium and magnesium retention, elevations in circulation serum concentrations of testosterone (libido factor), with the elevations in circulating serum concentrations of 17-beta-estradiol (a form of estrogen). Similar improvements can also be seen in Vitamin D deficient post-menopausal females.

No recommended daily allowance (RDA) has been established for boron in humans at this time. However, the following amounts are recommended to insure that you have sufficient daily boron intake. Boron is most abundant in pears, apples and grapes grown in rich boron soil. Other potential food sources are legumes (soy beans), nuts, and green, leafy vegetables, again assuming that the boron levels in the soil the foodstuffs were grown in were adequate.

**IODINE**

![IODINE GOITER BELT CHART](image)
Iodine deficiency is caused by a lack of iodine, a chemical element essential to the body’s physical and mental development, in a person's diet. It is the single most common cause of preventable mental retardation and brain damage in the world. The incidence of iodine deficiency occurs in certain geographical areas at higher altitudes with iodine depleted. Iodine deficiency is more prevalent in women than in men, and more common in pregnant women and adolescents. Iodine is an essential element for thyroid function, necessary for the normal growth, development and functioning of the brain and body. It also influences a variety of metabolic processes in the body (converting food to energy, regulating growth and fertility, and maintaining body temperature).

When the body becomes iodine-deficient the consequences can affect a person both physically and mentally. After many months of iodine deficiency a person may develop a goiter (an unsightly swelling of the thyroid gland in front of the neck), hypothyroidism and reduced mental function. It also increases the risk of still birth and infant deaths. Iodine-deficient women may give birth to babies with severe mental and neurological impairment. If this deficiency occurs during infancy or childhood, it causes irreversible mental retardation, growth failure, speech, and hearing defects, among others. Even mild deficiency may cause a low intellectual capacity.

Hypothyroidism refers to any state in which thyroid hormone production is below normal. There are many disorders that result in hypothyroidism that may directly or indirectly involve the thyroid gland. Since the thyroid hormone affects growth, development and many cellular processes, inadequate thyroid hormone has widespread consequences for the body. The symptoms of hypothyroidism are often subtle. They are not specific, which means they can mimic the symptoms of many other conditions. And patients with mild hypothyroidism often have no symptoms. Symptoms of hypothyroidism generally become more obvious as the condition worsens. Common symptoms include:

- Fatigue
- Depression
- Modest weight gain
- Cold intolerance
- Excessive sleepiness
- Dry, coarse hair
- Constipation
- Dry skin
- Muscle cramps
- Increased cholesterol levels
- Decreased concentration
- Vague aches and pains
- Swelling of the legs

As the deficiency becomes more severe, there may be puffiness around the eyes, a slowing of the heart rate, a drop in body temperature and heart failure. In its most profound form, severe hypothyroidism may lead to a life-threatening coma. This condition requires hospitalization and immediate treatment with thyroid hormones given by injection. If left untreated, hypothyroidism
can lead to an enlarged heart, worsening heart failure and an accumulation of fluid around the lungs. If a patient is experiencing the symptoms listed above, a blood test can confirm a diagnosis of hypothyroidism. Hypothyroidism is generally treated with iodine and or/medication to support thyroid hormones. A person with hypothyroidism may require life-long supplementation and follow-up care. Consult your doctor about treatment options available.

Once iodine deficiency is diagnosed, consult your doctor about treatment options. Commonly, iodine preparations are prescribed. In deciding to use iodine preparations, the risks of taking them must be weighed against the good it will do. This is a decision you and your doctor will need to make.

In the United States, iodine is added to table salt so it is the primary food source of iodine. Iodine is also widely available in the following foods:

- Seafood
- Cod
- Sea bass
- Haddock
- Perch
- Kelp
- Dairy products
- Plants grown in soil rich in iodine

Because iodine cannot be stored for long times in the body, tiny amounts must be consumed regularly, but food grown in iodine poor soil will not provide sufficient dietary iodine. Most people, however, are able to meet their iodine requirements by eating seafood, seaweed, iodized salts and plants grown in iodine-rich soil.
Magnesium - Magnesium plays important roles in the structure and the function of the human body. The adult human body contains about 25 grams of magnesium. Over 60% of all the magnesium in the body is found in the skeleton, about 27% is found in muscle, 6% to 7% is found in other cells, and less than 1% is found outside of cells. Function - Magnesium is involved in more than 300 essential metabolic reactions.

1. Energy production
2. Synthesis of essential molecules
3. Structural role in the chromosomes
4. Structural role of bone cell membranes
5. Ion transport across cell membranes
6. Impulses for muscle contraction
7. Cell signaling
8. Cell migration
9. Impulses for normal heart rhythm
Nutrient Interactions

1. Zinc - High doses of zinc in supplemental form apparently interfere with the absorption of magnesium.
2. Fiber - Large increases in the intake of dietary fiber have been found to decrease magnesium utilization in experimental studies.
3. Protein - Dietary protein may affect magnesium absorption. Vitamin D and calcium

Deficiency - Magnesium deficiency in healthy individuals who are consuming a balanced diet is quite rare because magnesium is abundant in both plant and animal foods and because the kidneys are able to limit urinary excretion of magnesium when intake is low.

The following conditions increase the risk of magnesium deficiency:

1. Gastrointestinal disorders: Prolonged diarrhea, Crohn's disease, malabsorption syndromes, celiac disease, surgical removal of a portion of the intestine, and intestinal inflammation due to radiation may all lead to magnesium depletion.
2. Renal disorders (magnesium wasting): Diabetes mellitus and long-term use of certain diuretics (see Drug interactions) may result in increased urinary loss of magnesium. Multiple other medications can also result in renal magnesium wasting.
3. Chronic alcoholism: Poor dietary intake, gastrointestinal problems, and increased urinary loss of magnesium may all contribute to magnesium depletion, which is frequently encountered in alcoholics.
4. Age: Several studies have found that elderly people have relatively low dietary intakes of magnesium. Intestinal magnesium absorption tends to decrease with age and urinary magnesium excretion tends to increase with age; thus, suboptimal dietary magnesium intake may increase the risk of magnesium depletion in the elderly.

Disease Prevention

1. Hypertension (high blood pressure) 8. Endothelial dysfunction
2. Cardiovascular disease 9. Diabetes mellitus
3. Disease Treatment 10. Osteoporosis
4. Hypertension (high blood pressure) 11. Migraine headaches
5. Preeclampsia-eclampsia 12. Asthma
6. Cardiovascular Disease
7. Myocardial infarction (heart attack)
Food sources - A large U.S. national survey indicated that the average magnesium intake for men (about 320 mg/day) and the average intake for women (about 230 mg/day) were significantly below the current recommended dietary allowance (RDA). Magnesium intakes were even lower in men and women over 70 years of age. Such findings suggest that marginal magnesium deficiency may be relatively common in the U.S. Because magnesium is part of chlorophyll, the green pigment in plants, green leafy vegetables are rich in magnesium. Unrefined grains and nuts also have high magnesium content. Meats and milk have intermediate magnesium content, while refined foods generally have the lowest magnesium content. Water is a variable source of intake; harder water usually has a higher concentration of magnesium salts.

**SELENIUM**

Selenium - Selenium is a trace element that is essential in small amounts, but like all essential elements, it is toxic at high levels. Humans and animals require selenium for the function of a number of selenium-dependent enzymes, also known as selenoproteins. During selenoprotein synthesis, selenocysteine is incorporated into a very specific location in the amino acid sequence in order to form a functional protein. Unlike animals, plants do not appear to require selenium for survival. However, when selenium is present in the soil, plants incorporate it non-specifically into compounds that usually contain sulfur.
Function

Selenoproteins - At least 25 selenoproteins have been identified in the human body with all 25 proteins found in the brain. The selenoproteins with an identified function include:

1. Glutathione
2. Thioredoxin
3. Thyroid hormone deiodinases
4. Selenoprotein P
5. Selenoprotein
6. Selenophosphate synthetase
7. Methionine-R-sulfoxide reductase
8. 15 kDA selenoprotein (Sep15)
9. Selenoprotein
10. Selenoprotein S

Nutrient interactions

Antioxidant nutrients - As an integral part of the glutathione peroxidases and thioredoxin reductase, selenium interacts with nutrients that affect cellular redox status (i.e., pro-oxidant/antioxidant balance).

Other minerals that are critical components of antioxidant enzymes include, copper (as superoxide dismutase), zinc (as superoxide dismutase), and iron (as catalase). Selenium as glutathione peroxidase also appears to support the activity of vitamin E in limiting the oxidation of lipids. Animal studies indicate that selenium and vitamin E tend to spare one another and that selenium can prevent some of the damage resulting from vitamin E deficiency in models of oxidative stress. Further, thioredoxin reductase maintains the antioxidant function of vitamin C by catalyzing its regeneration from its oxidized form, dehydroascorbic acid.

Iodine - Selenium deficiency may exacerbate the effects of iodine deficiency. Iodine is essential for the synthesis of thyroid hormone; however, selenoenzymes called iodothyronine deiodinases are also required for the conversion of thyroxine (T4) to the biologically active thyroid hormone triiodothyronine (T3). Selenium supplementation in a small group of elderly individuals decreased plasma T4, indicating increased deiodinase activity and thus increased conversion of T4 to T3. Insufficient selenium intake results in decreased activity of the glutathione peroxidases as well as some other thioredoxin reductase and thyroid deiodinases. Even when severe, isolated selenium deficiency does not usually result in obvious clinical illness. However, selenium-deficient individuals appear to be more susceptible to additional physiological stresses.

Disease Prevention - Immune function, viral infection, Cancer, Cardiovascular disease, Type 2 Diabetes Mellitus, HIV/AIDS - Possible mechanisms would be maximizing the activity of antioxidant selenoenzymes and improving antioxidant status, improving immune system function, affecting the metabolism of carcinogens and heavy metals, increasing the levels of selenium metabolites that inhibit tumor cell growth, influence of selenium on apoptosis, influence of selenium on DNA repair, and use selenium as an anti-angiogenic agent.
Food sources - The richest food sources of selenium are organ meats and seafood, followed by muscle meats. In general, there is wide variation in the selenium content of plants and grains because plants do not appear to require selenium. Thus, the incorporation of selenium into plant proteins is dependent only on soil selenium content. Brazil nuts grown in areas of Brazil with selenium-rich soil may provide more than 100 mcg of selenium in one nut, while those grown in selenium-poor soil may provide ten times less. In the U.S., grains are a good source of selenium, but fruits and vegetables tend to be relatively poor sources of selenium. In general, drinking water is not a significant source of selenium in North America.

The average dietary intake for adults in the U.S. has been found to range from 80 to 110 mcg/day. Because of food distribution patterns in the U.S., people living in areas with low soil selenium avoid deficiency because they eat foods produced in areas with higher soil selenium.

Supplements - Selenium supplements are available in several forms. The best form is selenomethionine, an organic form of selenium that occurs naturally in foods, which is about 90% absorbed. Selenomethionine and selenium-enriched yeast, which mainly supply selenomethionine, are also available as supplements. Sodium selenite and sodium selenate are inorganic forms of selenium. The consumer should be aware that some forms of selenium yeast on the market contain yeast plus mainly inorganic forms of selenium. Both inorganic and organic forms of selenium can be metabolized to selenocysteine by the body and incorporated into selenoenzymes, although too much inorganic selenium will cause type 2 diabetes.

Dr. Olree is available for consults, nutritional and spinal related problems. We schedule appointments on Wednesdays and Fridays in his office, by phone, or video conference (Skype). He interprets spinal MRIs, CT scans, and plain film x-rays. You may contact Dr. Olree by calling (989) 742-4242 to set up your appointment or go to www.emineral.info to fill out a consultation request form or send an email to Dr. Olree.