ZINC

Chocolate, cocoa powder

Peanuts, cashews, almonds, pumpkin seeds

Eggs

Spinach

Green peas

Chickpeas

Kidney beans

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Sperm Production and Male Sexual Health
Breast Cancer Prevention
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ZINC AND MEN'S HEALTH

Source: Chapter 7: "Ejaculation Control" in *The Tao of Sex, Health, and Longevity* by Daniel P. Reid (294)

"Furthermore, recent medical evidence indicates that with each and every ejaculation men suffer a **significant loss of zinc**, a rare but vital trace element. Frequent ejaculation thus results in a chronic, critical deficiency of zinc, symptoms of which include **loss of memory, mental confusion, paranoia and hypersensitivity to sunlight**. These facts seem to verify the 'old wives tale' that excessive male masturbation addles the mind, weakens the spine and leads to blindness."

ZINC

Source: http://www.whfoods.com/genpage.php?tname=nutrient&dbid=115

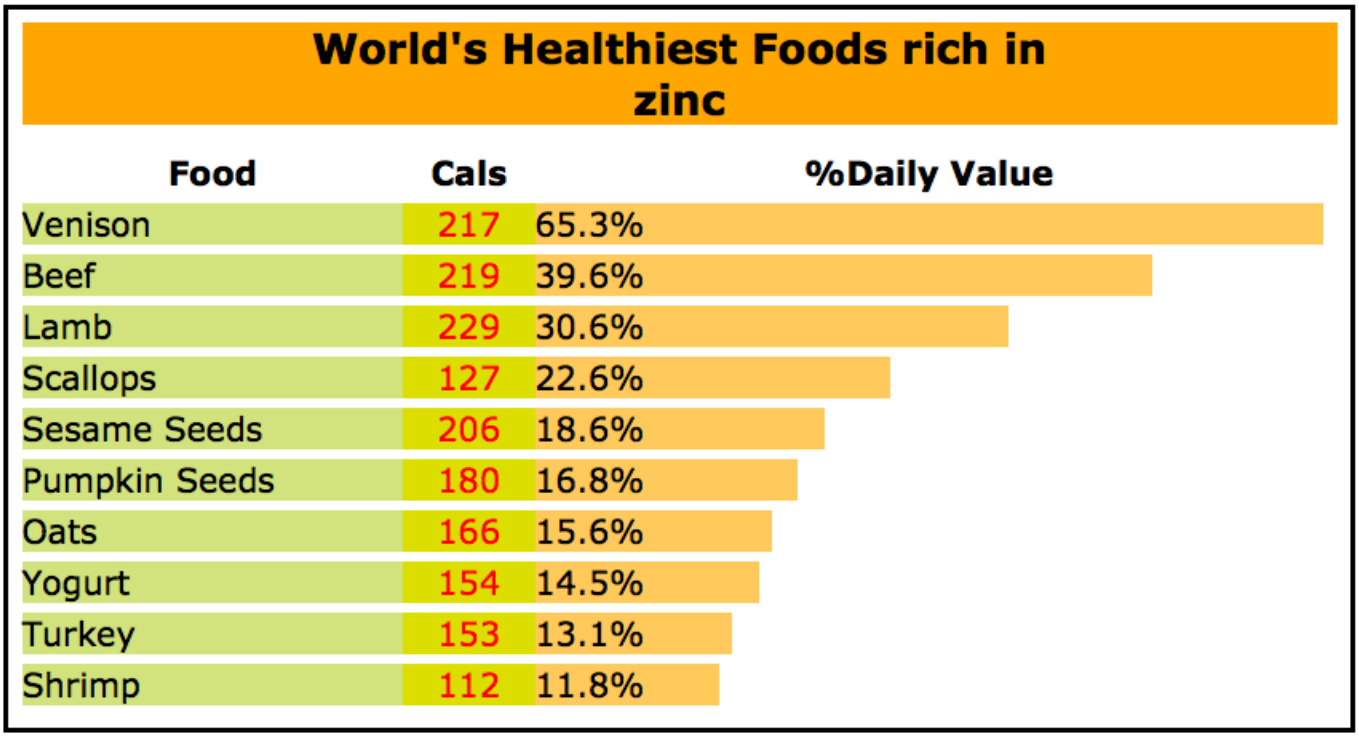
What can high-zinc foods do for you?

- Help balance blood sugar
- Stabilize your metabolic rate
- Prevent a weakened immune system
- Support an optimal sense of smell and taste

What events can indicate a need for more high-zinc foods?

- Impaired sense of taste or smell
- Lack of appetite
- Depression
- Growth failure in children
- Frequent colds and infections

Calf's liver is an excellent source of zinc while very good sources of zinc include crimini mushrooms, shiitake mushrooms, venison, and spinach.



Description

What is zinc?

Zinc is a micromineral needed in the diet on a daily basis, but only in very small amounts (50 milligrams or less). The other microminerals that all humans must get from food are arsenic, boron, cobalt, copper, chromium, fluorine, iodine, iron, manganese, molybdenum, nickel, silicon, vanadium, and zinc.

The first research studies to demonstrate the zinc's important in the diet focused on the issue of growth. When foods did not supply sufficient amounts of zinc, young men in Iran and Egypt were found to have impaired overall growth as well as impaired sexual maturation. These initial studies on zinc reflected some of the key functions served by this mineral, including regulation of genetic activity and balance of carbohydrate metabolism and blood sugar.

How it Functions

What is the function of zinc?

Regulating genetic activities

Zinc is an important regulator of many genetic activities. The cells of our body each have a special compartment called the nucleus, and inside the nucleus are approximately 100,000 genes. These genes provide instructions for the cell, and the cell has to decide which instructions to read. Zinc is essential for reading genetic instructions, and when diets do not contain foods rich in zinc, instructions get misread, or not read at all. (In biochemistry terms, the gene-reading process that requires zinc is called gene transcription.)

Supporting blood sugar balance and metabolic rate

Insulin, a hormone made by the pancreas, is often required to move sugar from our bloodstream into our cells. The response of our cells to insulin is called insulin response. When the foods in our diet do not provide us with enough zinc, insulin response decreases, and our blood sugar becomes more difficult to stabilize. Metabolic rate - the rate at which we create and use up energy - also depends on zinc for its regulation. When zinc is deficient in the diet, metabolic rate drops (along with hormonal output by our thyroid gland).

Supporting smell and taste sensitivity

Gustin is a small protein that is directly involved in our sense of taste. Zinc mus be linked to gustin in order for our sense of taste to function properly. Because of this relationship between zinc and taste, and because taste and smell are so closely linked in human physiology, impaired sense of taste and smell are common symptoms of zinc deficiency.

Supporting immune function

Many types of immune cells appear to depend upon zinc for optimal function. Particularly in children, researchers have studied the effects of zinc deficiency (and zinc supplementation) on immune response and number of white blood cells, including specific studies on T lymphocytes, macrophages, and B cells (all types of white blood cells). In these studies, zinc deficiency has been shown to compromise white blood cells numbers and immune response, while zinc supplementation has been shown to restore conditions to normal.

Deficiency Symptoms

What are deficiency symptoms for zinc?

Because of the link between zinc and the taste-related protein called gustin, impaired sense of taste and/or smell are common symptoms of zinc deficiency. Depression, lack of appetite, growth failure in children, and frequent colds and infections can also be symptomatic of insufficient dietary zinc.

Toxicity Symptoms

What are toxicity symptoms for zinc?

Zinc toxicity has been reported in the research literature, and in 2000 the National Academy of Sciences set a tolerable upper limit (UI) of 40 milligrams for daily intake of zinc. (This limit applies to all individuals age 19 and over.) A metallic, bitter taste in the mouth can be indicative of zinc toxicity, as can stomach pain, nausea, vomiting, cramps, and diarrhea mixed with blood.

Impact of Cooking, Storage and Processing

How do cooking, storage, or processing affect zinc?

Like most minerals, zinc is present in many different forms in food, and can vary greatly in its response to cooking and processing. In some foods, where a greater percent of zinc is found in water-soluble form and contact with water is great, high losses of zinc can occur.

For example, when navy beans are cooked, 50% of the original zinc is lost. The processing of wheat is another example of the susceptibility of zinc to substantial loss. In 60% extraction wheat flour - the kind that is used to make over 90% of all breads, baked goods, and pastas sold in the U.S., almost 75% of the original zinc is lost.

Factors that Affect Function

What factors might contribute to a deficiency of zinc?

In addition to dietary deficiency, problems in the digestive tract can contribute to zinc deficiency. These problems include irritable and inflammatory bowel disorders, as well as insufficient output by the pancreas that prevents proper digestion of food.

Protein deficiency, and deficiency of one particular part of protein - the amino acid cysteine - can also contribute to zinc deficiency by preventing synthesis of transport and storage molecules that are used to shuttle and store zinc in the body.

Loss of zinc through chronic diarrhea or profuse sweating (as might occur with heavy physical labor or athletic training) can also contribute to deficiency of this mineral.

Nutrient Interactions

How do other nutrients interact with zinc?

A Tolerable Upper Limit (UL) for zinc of 40 milligrams per day was set by the National Academy of Sciences in 2000 for all adults 19 years and older. The establishment of this limit was largely related to the ability of zinc - particularly supplemental zinc - to impair the status of other nutrients.

The most important of these nutrients are copper and calcium. Even at moderate doses of 18-20 milligrams that can easily be obtained from food, zinc can compromise the body's supply of copper unless foods rich in copper are also included in the diet. When few foods high in calcium are included in the diet, high levels of zinc intake (usually obtained from supplements) can also decrease absorption of calcium from the intestine into the body.

Although zinc is associated with these potential detrimental effects on copper and calcium, it is also supportive of other nutrients. The best studied of these nutrients in vitamin A. Without zinc, vitamin A cannot be effectively transported around the body, and cannot efficiently be mobilized when it is needed.

Health Conditions

What health conditions require special emphasis on zinc?

Zinc may play a role in the prevention and/or treatment of the following health conditions:

- Acne
- Alcoholism
- Alopecia
- Alzheimer's disease
- Anorexia nervosa
- Atopic dermatitis
- Benign prostatic hypertrophy
- Cervical dysplasia
- Common cold
- Crohn's disease
- Diabetes
- Epilepsy
- Graves' disease
- Herpes simplex
- HIV/AIDS
- Infertility (male)
- Inflammatory bowel diseases
- Influenza
- Macular degeneration
- Osteoarthritis
- PMS
- Psoriasis
- Rheumatoid arthritis
- Seborrheic dermatitis
- Senile cataracts

Food Sources

What foods provide zinc?

Calf's liver is an excellent source of zinc. Crimini mushrooms, shiitake mushrooms, spinach, and venison are very good sources of zinc.

Good sources include asparagus, chard, scallops, lamb, beef, maple syrup, shrimp, green peas, yogurt, oats, pumpkin seeds, sesame seeds, turkey, miso, and spelt.

Introduction to Nutrient Rating System Chart

In order to better help you identify foods that feature a high concentration of nutrients for the calories they contain, we created a Food Rating System. This system allows us to highlight the foods that are especially rich in particular nutrients. The following chart shows the World's Healthiest Foods that are either an excellent, very good, or good source of zinc. Next to each food name, you'll find the serving size we used to calculate the food's nutrient composition, the calories contained in the serving, the amount of zinc contained in one serving size of the food, the percent Daily Value (DV%) that this amount represents, the nutrient density that we calculated for this food and nutrient, and the rating we established in our rating system. For most of our nutrient ratings, we adopted the government standards for food labeling that are found in the U.S. Food and Drug Administration's "Reference Values for Nutrition Labeling." Read more background information and details of our rating system.

World's Healthiest Foods ranked as quality sources of Zinc						
Food	Serving Size	Cals	Amount (mg)	DV (%)	Nutrient Density	World's Healthiest Foods Rating
Mushrooms - Crimini	5 oz-wt raw	19.1	0.96	6.4	6.0	very good
Venison	4 oz-wt	216.6	9.80	65.3	5.4	very good
Spinach	1 cup cooked	41.4	1.37	9.1	4.0	very good
Mushrooms - Shiitake	5 oz-wt raw	48.2	1.46	9.7	3.6	very good
Beef	4 oz-wt	218.9	5.95	39.7	3.3	good
Asparagus	1 cup raw	26.8	0.72	4.8	3.2	good
Scallops	4 oz-wt	127.0	3.40	22.7	3.2	good
Lamb	4 oz-wt	229.1	4.60	30.7	2.4	good
Swiss Chard	1 cup cooked	35.0	0.58	3.9	2.0	good
Maple Syrup	2 tsp	34.8	0.55	3.7	1.9	good
Shrimp	4 oz-wt	112.3	1.77	11.8	1.9	good
Green Peas	1 cup raw	115.7	1.64	10.9	1.7	good
Yogurt	1 cup	154.3	2.18	14.5	1.7	good
Oats	1 cup cooked	166.1	2.34	15.6	1.7	good
Pumpkin Seeds	0.25 cup	180.3	2.52	16.8	1.7	good
Sesame Seeds	0.25 cup	206.3	2.79	18.6	1.6	good
Turkey	4 oz-wt	153.1	1.97	13.1	1.5	good

Miso	1 tbs	34.2	0.44	2.9	1.5	good

World's Healthiest Foods Rating	Rule
excellent	DV>=75% OR Density>=7.6 AND DV>=10%
very good	DV>=50% OR Density>=3.4 AND DV>=5%
good	DV>=25% OR Density>=1.5 AND DV>=2.5%

Public Health Recommendations

What are current public health recommendations for zinc?

The Recommended Dietary Allowances for zinc, set in 1999 by the Institute of Medicine at the National Academy of Sciences, are as follows:

- Males and females, 0-6 months: 2 milligrams
- Males and females, 6-12 months: 3 milligrams
- Males and females, 1-3 years: 3 milligrams
- Males and females, 4-8 years: 5 milligrams
- Males and females, 9-13 years: 8 milligrams
- Males 14 years and older: 11 milligrams
- Females 14-18 years: 9 milligrams
- Females 19 years and older: 8 milligrams
- Pregnant females 18 years or younger: 12 milligrams
- Pregnant females 19 years and older: 11 milligrams
- Lactating females 18 years or younger: 13 milligrams
- Lactating females 19 years and older: 12 milligrams

The National Academy of Sciences set a tolerable upper limit (UI) of 40 milligrams for daily intake of zinc. (This limit applies to all individuals age 19 and over.) For more details on this, see the Toxicity Symptoms section above.

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ZINK DEFICIENCY IS A GLOBAL CONCERN

Source: Dr. Joe Mercola http://articles.mercola.com/sites/articles/archive/2009/10/08/Zinc-Deficiency-is-a-Global-Concern.aspx

Experts say as many as 2 billion people around the world have diets deficient in zinc, and studies are raising concerns about the health implications this holds for infectious disease, immune function, DNA damage and cancer.

Zinc is essential to protecting against oxidative stress and helping DNA repair. One new study has found DNA damage in humans caused by only minor zinc deficiency.

Zinc deficiency is quite common in the developing world. Even in the United States, about 12 percent of the population is probably at risk for zinc deficiency, and perhaps as many as 40 percent of the elderly. Many or most people have never been tested for zinc status, but existing tests are so poor it might not make much difference if they had been.

Dr. Mercola's Comments:

It's well known that one of the symptoms of zinc deficiency is frequent colds and infections, and this trace mineral became popular a few years back in the form of lozenges to relieve cold symptoms (zinc is directly toxic to cold viruses and stimulates your body to produce antibodies to destroy the virus).

However, zinc is essential for much, much more than just taking away the sniffles. **There are more biological roles for zinc than for all other trace elements put together**. It plays a crucial role in such things as:

- Cell growth
- Gene transcription (the process that allows your cells to read genetic instructions)
- Keeping your immune system strong
- Stabilizing your metabolic rate
- Balancing your blood sugar
- Maintaining your sense of taste and smell

Adding zinc to the diets of teenagers has even been shown to cause improvements in memory and attention span.

Zinc is also important to protect your body against oxidative stress and DNA repair. While some level of oxidative stress is a normal result of your body processes, many, many factors, from pollution to obesity to mental stress, can cause an excess of free radicals in your body -- and this is associated with oxidative stress and various chronic diseases and aging.

If you are deficient in zinc, however, your body may become less able to repair genetic damage caused by oxidative stress. Having low levels of zinc has even been found to cause strands of DNA to break and studies have linked zinc deficiency to various types of cancer, infection and autoimmune diseases.

A report in the *British Medical Journal* reported that more than 300 catalytically active zinc metalloproteins and more than 2,000 zinc-dependent transcription factors involved in gene expression of various proteins have been recognized.

But despite all the evidence, practically no attention has been given by the world's organizations to the problem of zinc deficiency.

Are You Deficient in Zinc?

Zinc deficiency is common in the developing world, and it's thought that about 12 percent of the U.S. population, and up to 40 percent of the elderly, are also at risk for zinc deficiency. Part of the problem is that many people do not eat enough zinc-rich foods, while the mineral is also not well absorbed.

Compounding the problem is that most people are not tested for zinc levels, and the available tests are not very accurate anyway.

So perhaps the best way to determine if you may be deficient in this essential mineral is to watch out for these common signs that you may need more zinc:

- **Lack of appetite**
- **Depression**
- **Impaired sense of taste or smell**
- **Frequent colds and infections**
- **Growth failure in children**

Autism and Lyme Disease

Dr. Dietrich Klinghardt is one of my primary medical mentors and one of his new passions is treating those with pyroluria or KPU, which results in high levels of pyrroles in the body from defective synthesis of hemoglobin. **This results in massive excretion of zinc.**

Dr. Klinghardt finds in his experience most with autism or Lyme Disease have this acquired defect and will not improve unless they take massive doses of zinc, somewhere on the order of 200 mg or more a day, which is about ten times the RDA. Unfortunately, this dose causes nausea in many that use it.

I will be posting a video and comprehensive protocol in the future that details this interesting hypothesis.

Is a Zinc Supplement a Good Option?

Zinc is an essential component of human nutrition and deficiency can result in some devastating symptoms, so should you take a supplement just in case?

Well, the key to supplement use is understanding who needs them and when. This usually involves an individual assessment so that you can be sure YOU are being treating, not just your set of symptoms.

So it is important to avoid the conventional paradigm approach to nutrients -- and that is often targeting a specific nutrient for a specific disease. In reality, nothing is isolated in your body, and taking zinc indiscriminately can be quite problematic.

If one does not suffer with pyroluria zinc supplementation can lead to excess zinc, which may:

- Cause you to become deficient in copper, which may lead to anemia
- Double your risk of prostate cancer (for men)
- Lead to nausea, stomach pain, vomiting, and even diarrhea if you take too much

So about the only time you may want to consider a zinc supplement would be if you come down with a cold, as zinc lozenges (that you suck on, and don't just swallow) may help to relieve your symptoms.

Beyond that, my personal recommendation would be to hold off on the zinc supplements, with the exception being if you are working with a natural health care practitioner who has determined you are deficient and in need of supplementation. This may be of particular importance for pregnant women (adequate zinc is essential for development of the fetus) and vegetarians, as it's thought that zinc from plant sources may not be well absorbed.

But for most people, the best option would be to simply increase zinc in your diet from the foods you eat. Some of the best food sources of zinc are:

- **Liver**
- **Grass-fed beef**
- **Crimini mushrooms**

- **Spinach**
- **Sea vegetables**
- **Pumpkin seeds**
- **Green peas**

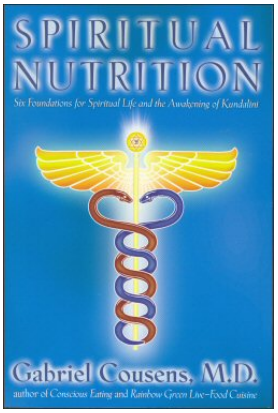
Again, it's thought that zinc is better absorbed from animal sources than plant sources, so if you are serious about increasing your zinc intake you may want to add more organic grass-fed beef or liver to your diet.

For reference, the recommended daily allowance for zinc is eight milligrams a day for women and 11 milligrams for men (anything over 50 milligrams a day may be excessive). Just how many high-zinc foods will you need to eat to get to that amount?

- **Four ounces of liver will supply you with 72 percent of the daily recommended value**
- **Four ounces of beef tenderloin will supply you with 42 percent**
- **Four ounces of lamb will give you about 31 percent**
- **Five ounces of crimini mushrooms or one cup of spinach will give you around 10 percent**

ZINC: MIRACLE IN THE HUMAN BODY

Source: *Spiritual Nutrition* by Dr. Gabriel Cousens, M.D.



Zinc is very important in the functioning of the pancreas, as well as the male genital function especially **prostrate gland, sperm production, and even genital formation**. It is highest in the thyroid and sexual organs. **Zinc occurs in the highest percentage in the prostrate gland.** It is next highest in the kidney, hair, nails, red blood cells, muscles, thyroid, eyes, liver, muscle, aorta, pancreas, spleen, ovary, testes, lung, brain, and finally adrenals. Zinc is important in the treatment of diabetes, because it's connected with insulin formation. Zinc also helps maintain proper blood sugar levels in conjunction with chromium. Some people find zinc helpful in the management of rheumatoid arthritis.

Zinc is also important in the healing of arteriosclerosis, along with copper and germanium.

Zinc is important in the healing of artery injuries. It can be used in the treatment of lymphatic congestion.

Zinc is important for healing bones and wounds. It also works synergistically with vitamin A and sulfur to create strong hair. It is important for night vision, as well as taste and smell.

It is particularly good for supporting brain function and helps improve memory and the mental

processes.

Zinc is helpful in treating people with alcoholism, as alcohol tends to flush zinc out of the system. Zinc is important for normal cell division, repair, and growth.

It is needed for the synthesis of DNA. Several of the zinc-dependent enzymes are involved in nucleic acid metabolism including RNA polymerases. Zinc is an important part of proteins that regulate the activity of certain RNA polymerases. These components are called zinc fingers transcription factors and are part of structural factors that bind to regulatory DNA sequences. Zinc is also needed for nucleic acid synthesis. It particularly has its impact on sex hormones, thymic hormones, insulin, and growth hormone. The overall result is that growth and normal development of the sexual energies and organs as part of the larger reproductive system depend on zinc. Zinc is very high in breast milk for the first two weeks and a newborn baby's liver contains three times more zinc as that of an adult, suggesting its importance for development.

Zinc may be the most important antioxidant known.
Zinc affects more than 300 enzymes.

Zinc plays a role in the enzyme systems needed for the breaking down of old collagen and the synthesis of new collagen. It helps with creating healthy skin and building new collagen. It is needed to support skin beauty That is why it is very helpful in the treatment of burns. It can even help in DNA repair. A normal amount of zinc helps protect against wrinkling, stretch marks during pregnancy, and signs of aging. Zinc is part of at least 25 enzyme systems in the digestive and metabolic and respiratory systems. Carbohydrate digestion and phosphorous metabolism are also affected by zinc. In the ileum and duodenum, in the small intestines, zinc is absorbed. Zinc does not kill viruses and bacteria, but it stops them from reproducing, therefore it is useful to support the immune system. Zinc quickly dissolves and moves throughout the body fluids, especially saliva and nasal secretions. Because of this, zinc is a tremendous line of defense against infections. Zinc in your saliva, for example, helps stop bacteria growth in the mouth that produces harmful acids that destroy tooth enamel. Because of this, healthy zinc levels in the body are associated with fewer cavities in the teeth. A good healthy zinc level also stops body odor because it eliminates the bacteria.

The body contains about 1.8 grams of zinc. Zinc is one of seventeen minerals that are essential to life. Others include cobalt, nickel, copper, and iron. Zinc often needs vitamin A as a cofactor.

Calcium and phytic acid compete against zinc. This is the problem we have sometimes with the grains, which are high sources of calcium and phytic acid. Zinc also competes with cadmium. Part of the treatment for cadmium toxicity is increasing the amount of zinc.

Symptoms of zinc deficiency: include fatigue, along with increased rate of infections and injuries. Low zinc can cause dwarfism and delayed sexual development.

Mothers with a zinc deficiency tend to have smaller babies and babies with smaller-than-normal brains. Zinc deficiency has an association with different types of birth defects such as Down's syndrome, spina bifida, and clubbed feet.

Zinc deficiency is also associated with Alzheimer's, paranoia, diabetes, PMS, depression,

infertility, herpes, acne, obesity, alcoholism, high blood pressure, thyroid problems, hair loss, prostate cancer, and various eye difficulties, including cataracts. Zinc deficiency can cause slow healing. Zinc deficiency can come from high alcohol consumption.

Vegetarians tend to run a little low on zinc but consumption of fruits, vegetables, and seeds in high quantities creates significant protection from zinc deficiency. **About 60 percent of adults over age 60 are zinc-deficient.**

Good sources of zinc include poppy seeds, pumpkin seeds, pecans, cashews, pine nuts, macadamia nuts, sunflower seeds, sesame seeds, beets, and coconuts.

ZINC AIDS IN REGULATING BRAIN CELL COMMUNICATION

Source: Life Extension Foundation, http://www.lef.org/whatshot/2011_09.htm

LifeExtension®

A report published online on September 21, 2011 in the journal Neuron reveals an important role for the mineral zinc in the regulation of brain cell communication. The finding is the first instance of proof that an element, as opposed to a chemical compound, is used by the nervous system as a neurotransmitter.

In research conducted over half a century ago, high concentrations of zinc were found in nerve cell compartments known as vesicles that package neurotransmitters—the chemicals that facilitate the transmission of impulses between neurons. Neurons in the brain's hippocampus, which is the center of learning and memory, were discovered to have the highest levels of zinc. However, it remained unknown whether the zinc that was found in the cells' vesicles actually played a role in nerve cell communication.

For the current investigation, researchers at Duke University and the Massachusetts Institute of Technology utilized a novel zinc chelator to help bind and remove zinc from hippocampal brain samples derived from mice. "We discovered that zinc is essential to control the efficiency of communication between two critical populations of nerve cells in the hippocampus," senior author James McNamara, MD, of Duke University reported. "This addresses a longstanding controversy in the field."

Although having adequate zinc is essential for nerve cell communication, excessive enhancement of this communication has been observed in animals with epilepsy. "Carefully controlling zinc's regulation of communication between these nerve cells is critical to both formation of memories and perhaps to occurrence of epileptic seizures," Dr McNamara stated.

He noted that zinc supplements are widely available and are often used to treat depression and other brain disorders, however, it isn't known whether supplementing with the mineral changes the brain's zinc content or modifies the communication between its nerve cells.

ANGSTROM ZINC

Source: www.MEMinerals.com

Element #30 on the Periodic Table, Zinc (Zn) is a bluish white, lustrous metal. Used primarily to coat other metals to prevent mold and corrosion, Zinc is an extremely important nutritional element.

Zinc is unusual in that it quickly penetrates and moves through all bodily fluids, especially saliva and nasal secretions.

Zinc deficiency has been linked to numerous types of birth defects such as Down's Syndrome, Cleft Lip, Spina Bifida, and Club Limbs.

Hiatal hernias have also been linked to low zinc levels, as have such ailments as Alzheimers, Paranoia, Diabetes, PMS, Depression, Infertility, Herpes, Acne, Obesity, Anemia, Alcoholism, Hypertension, Thyroid Disorders, Urinary Tract Infections, Low Libido, Hair Loss, Crohn's Disease, Prostate Cancer, and various eye diseases, including cataracts.

In one study, women who were given proper zinc supplements showed an increase of 20% in mental capacity over a 6 week period.

Zinc has been medically proven to shrink enlarged prostate glands, helping to prevent prostate cancer.

Zinc is essential in maintaining a healthy male reproductive system.

It has been shown to be effective in promoting proper brain function and hormone production, which results in greater libido.

About Angstrom Minerals

In order for a mineral to be assimilated correctly on the cellular level, it must be in a form no larger than an angstrom in size. These angstrom-sized particles should also be completely water soluble, which allows the mineral to be quickly 100% absorbed in either the mouth (sublingually) or in the upper stomach where lower stomach acids will not destroy them. It takes 10,000 angstrom-sized particles lined up on a horizontal plane to cross the distance equal to one micron.

Please note that these are not colloidal minerals. Colloidal may help to a certain degree, but may accumulate in the various tissues of the body causing toxicity. Angstrom sized particles of minerals are the size in which plants, fruits and vegetables deliver minerals to humans.

ZINC AND SELENIUM: THE MINERALS THAT FIGHT BREAST

CANCER

Source: Barbara L. Minton, Natural News,
http://www.naturalnews.com/026321_zinc_cancer_selenium.html

Any woman wanting to avoid breast cancer or its recurrence needs to be aware of the real risk factors. These are not the factors you hear about from the typical oncologist who is interested in pushing drugs. Imbalances in the body are the real risk factors that explain why women get breast cancer, not lack of drugs. The only way to avoid cancer or its recurrence is to address these imbalances. Two minerals, zinc and selenium, are key in maintaining balance in the body and keeping cancer away. Recent research has added to the pile of data underscoring the importance of these minerals in keeping women cancer-free.

Researchers at Pennsylvania State University have reported that glands in the breast have unique zinc requirements resulting from their need to transfer extraordinary amounts of zinc into milk during lactation. When nursing women's breasts are deficient in zinc, the result can be severe zinc deficiency in the infant, resulting in impaired growth and development.

When zinc is deficient or not properly metabolized, breast cancer is often an additional outcome.

Lack of zinc has been implicated not only in the initiation of breast cancer, but also in the transition, progression, and metastasis of the disease. When zinc is deficient, cellular functioning in the breast is compromised. (Genes and Nutrition, April 2)

In France, scientists report that estrogen receptor expression in breast cancers is associated with differentiated tumors and a more favorable prognosis. The greater the resemblance of cancerous breast cells to non-cancerous breast cells, the less threatening is the disease. Although the exact mechanism underlying the protection ERs play against cancer progression remains to be researched, these scientists studied the actions of ER alpha, and documented that one of the ways this ER inhibits invasion is though its first zinc finger. A zinc finger is a group of proteins organized around a zinc ion that can bind to DNA and influence gene regulation. (Advances in Experimental Medicine and Biology, 2008)

In other research, Dr. David Watts reviewed the hair trace mineral reports of thousands of women and found that a pattern of elevated boron, copper and calcium levels with lower levels of zinc occurred in women with breast cancer. According to Dr. Watts, boron and copper appear to make the body more sensitive to the stimulatory effects of estrogen, and less responsive to the quieting effects of progesterone. Zinc is the mineral that aids in the production and utilization of progesterone, so this pattern of mineralization makes women less progesterone responsive and more estrogen sensitive. Raising zinc levels and lowering boron, copper and calcium levels can bring these women into mineral balance and help in the creation of hormonal balance.

The primary gene protecting women from breast cancer, p53, is thought to be the most frequently mutated or altered gene in the development of cancer. This gene

requires zinc, and if it is missing, the gene becomes mutated, resulting in it becoming inactivated or suppressed. Dysfunction of p53 is well documented in the development of breast cancer, indicating that a zinc deficiency is a risk factor for breast cancer independent of the levels of boron, copper and calcium.

Zinc is important in prostate gland function and may help prevent and treat prostate cancer. It has another important role in the lives of women too. Zinc is required for protein synthesis and collagen formation. Without adequate levels of zinc, skin begins to sag and lose its elasticity. The optimal balance ratio for copper and zinc is 1 to 10 according to nutrition experts Phyllis Balch CNC and James Balch M.D.

In addition to sagging skin, deficiency of zinc may result in the loss of the senses of taste and smell. It can cause fingernails to become thin, peel and develop white spots. Other possible signs of zinc deficiency for women include hair loss, high cholesterol levels, impaired night vision, increased susceptibility to infection, memory impairment, diabetes, skin lesions, and slow wound healing.

Food sources for zinc are brewer's yeast, egg yolks, kelp, lamb, legumes, lima beans, liver, meats, mushrooms, pecans, poultry, pumpkin seeds, sardines, seafood, soy lecithin, sunflower seeds, and wheat germ. Zinc is found in alfalfa, burdock, cayenne, chamomile, dandelion, eyebright, fennel seeds, milk thistle, nettle, parsley, rose hips, sage, skullcap, and wild yam.

Zinc picolinate, zinc citrate, and zinc as methionine are good choices for supplemental zinc. These are available from many supplement companies.

The relationship between selenium status and intake among breast cancer patients was studied by scientists in Kuala Lumpur. 64 women with breast cancer and 127 matched controls were interviewed to obtain information on their habitual dietary intakes, demographic data, and medical history. Selenium status was determined from toenail and hair analysis. The researchers found that total energy and protein intake was significantly higher among controls than among the breast cancer cases. The selenium intake among the women with breast cancer was significantly lower than the controls. Breast cancer risk decreased with the increasing quartiles of selenium intake. Selenium in hair did not differ among breast cancer cases and controls, but selenium status in the nails of controls was significantly higher compared to the breast cancer cases. (Sinapore Medical Journal, March).

In a recent study done at the University of Washington, scientists investigated the signaling pathways modulated by selenium. They compared global gene expression profiles in mammary tissues from pubescent female rats maintained on a selenium (3ppm) diet with those on a standardized diet. The selenium-enriched diet altered the steady-state levels of genes involved in various cellular functioning, the most dramatic of which was the changes in the expression of multiple genes that regulate circadian rhythm.

The normal mammary tissue of rats fed the standardized diet showed little circadian oscillation relative to liver tissue. However, the mammary tissue of the selenium fed rats showed a progressive, time-dependent increase in the expression of circadian gene Per2, and a circadian regulated transcription factor. Further, the results showed that the expression of Per2 and transcription

mitigated RNA was significantly decreased in mammary tumors arising in selenium fed rate, but not in tumors of rats on the control diet. This suggests that selenium-induced elevation in the expression of circadian genes was incompatible with mammary cancer. The researchers concluded that the Per 2 gene is an important target of selenium for cancer prevention. (Cancer Prevention Research, July, 2008)

Selenium's main role is inhibiting the oxidation of fats as a component of the enzyme glutathione peroxidase, one of the most powerful of the body's own antioxidants. When combined with vitamin E, selenium protects the immune system. It plays a vital role in regulating the effects of thyroid hormone on fat metabolism. In a study, men who consumed 200 mcg of selenium daily over a ten-year period had roughly half the risk of developing lung, prostate, and colorectal cancer compared with men who did not.

Symptoms of selenium deficiency are exhaustion, high cholesterol, infections, liver impairment, and pancreatic insufficiency. Westerners often do not have enough selenium, because it is processed out of the foods typically eaten. This is one of the reasons that American men are five times more likely than Japanese men to die from prostate cancer. The typical Asian diet contains four times the amount of selenium as the typical American diet.

Selenium is found in meat and grains, but the level depends on the soil content where the food was grown. It can be found in brewer's yeast, broccoli, brown rice, chicken, dairy products, garlic, kelp, liver, molasses, onions, salmon, seafood, vegetables, wheat germ, and whole grains. Perhaps the best source of selenium is Brazil nuts. Eating two of the nuts a day provides 240 mcg of selenium. Earl Mindell, in his Vitamin Bible, recommends 200 mcg of selenium intake daily.

For more information:

http://www.organicfacts.net/health-benefits/minerals/health-benefits-...
http://www.naturalnews.com/024456.html
http://www.survivordiver.com/breast_cancer_factors.htm
Phyllis and James Balch, *Prescription for Nutritional Healing*, Fourth edition.

NUTRITION AND THE PROSTATE

Source: http://www.doctoryourself.com/prostate.html

If there were a mineral that could be as important for the prostate as vitamin C is, it would be zinc. Infection or other stress results in lower blood serum zinc levels in general and lower prostate levels in particular. **In prostatitis, zinc levels are only ONE-TENTH of those in a normal prostate.** (Fair and Heston,1977; Pfeiffer, 1978) One time-tested prostate remedy is eating pumpkin seeds. It is no surprise that pumpkin seeds are a good source of zinc, as are shellfish (especially oysters, which would account for still more folklore) and nutritional yeast. A daily zinc supplement totaling 50 to 100 milligrams is frequently recommended in the natural healing literature, and that amount cannot be faulted by medical literature.

Since men lose zinc in every seminal emission, their need for the mineral is higher than a woman's. Research by Dr. Irving M. Bush and the Center for the Study of Prostatic Diseases in Chicago employed 50 to 100 mg of zinc per day for as long as 4 months to as little as only two weeks. There was prompt improvement in 70 per cent of the cases.

Not bad for just a single mineral. (Taylor DS. Nutrients can remedy prostate problems. *Today's Living*, February 1990, p 12-13.)

. . .

Zinc is as helpful with enlarged prostates as it is with inflamed ones, since zinc deficiency results in prostate enlargement. Very few men obtain even the low US RDA of 15 milligrams of zinc a day, and this would explain a lot. Supplemental doses, commonly between 50 and 100 mg daily, may help shrink a swollen prostate. Toxicity of zinc is very low. Side effects of diarrhea and anemia begin at about 500 mg daily, vastly more than anyone would need to take. (Even at that level, supplemental iron and copper alleviate the side effects.) How effective is zinc therapy? **Dr. Irving Bush (mentioned previously) of the Chicago Medical School and researchers from Cook County Hospital studied over 5,000 patients and have confirmed that zinc prevents prostate enlargement.**

ZINC AND PROSTATE CANCER

Source: Emily Ho, Ph.D., LPI Principal Investigator
Michelle Yan, OSU Graduate Student
http://lpi.oregonstate.edu/ss05/zinc.html

Summary: Although zinc is an essential mineral in human nutrition, many people have insufficient zinc status due to low dietary intake. Zinc functions as an antioxidant and is involved in many critical biochemical reactions. It also helps to protect DNA from damage and assists in its repair. Zinc is especially important in the prostate and may protect it from early damage that could lead to cancer, although our studies with prostate cancer cells in culture indicate that zinc supplementation may be less useful in treating prostate cancer.

The role of zinc in a wide range of cellular processes, including cell division and proliferation, immune function, and defense against free radicals, has been well established. Zinc is the most abundant trace element in cells, and increasing evidence emphasizes zinc's important role in both genetic stability and function. For example, about 25% of the total zinc present in rat liver is found within the nuclei of cells, which also contain the DNA. Zinc is a component of chromatin, which is the stable complex of DNA and proteins in the cell's nucleus, and also plays a role in DNA replication, transcription, and repair. Zinc is found in over 300 enzymes, including copper/zinc superoxide dismutase, which is an important antioxidant enzyme, and in several proteins involved in DNA repair. Zinc also helps to protect cellular components from oxidation and damage. Our laboratory is investigating the links between zinc deficiency, oxidative stress, DNA damage and repair, and the risk of cancer.

Zinc deficiency can lead to immune dysfunction and impairments in growth, cognitive function, and hormonal function. It is estimated that nutritional zinc deficiency affects over 2 billion people worldwide, especially those in developing countries. However, deficiency is not a problem only in

developing countries. According to the USDA's 1996 Continuing Survey of Food Intakes, over 70% of Americans do not consume the recommended daily allowance for zinc, which is 8 mg for women and 11 mg for men. Although severe zinc deficiency is rare, 10% of individuals do not consume even half of the RDA for zinc, indicating that a significant percentage of the population may be marginally zinc deficient. The pathological signs of zinc deficiency include stunted growth, impaired childbirth, neuropathy, decreased appetite, diarrhea, dermatitis, hair loss, bleeding, hypotension, and hypothermia. Zinc deficiency affects many biological systems because of zinc's essential role in many aspects of cellular metabolism. Zinc deficiency can occur in populations with low dietary zinc intake and high intake of phytate, a substance found in seeds and cereal grains that binds strongly to zinc, making it biologically unavailable. Populations that are at high risk include infants and young children, whose requirements for zinc are high. In addition, the elderly have an increased risk of zinc deficiency because zinc absorption may become impaired with age. The elderly also tend to consume low-zinc diets. Foods rich in zinc include red meat, seafood, and several plant sources, such as whole grains and legumes, but the zinc in plant foods is much less bioavailable.

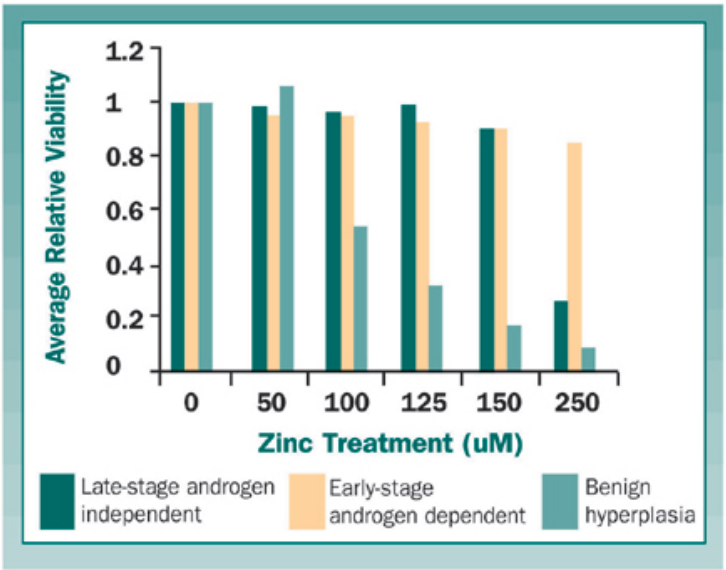
The role of zinc in cancer has received increasing attention for several reasons. The link between zinc deficiency and cancer has now been established by human, animal, and cell culture studies. We also know that zinc status is compromised in cancer patients compared to healthy people. Oxidative DNA damage and chromosome breaks have been reported in animals fed a zinc-deficient diet. In rats, dietary zinc deficiency causes an increased susceptibility to tumor development when the rats are exposed to carcinogens.

Zinc also appears to play an important role in maintaining prostate health, but the precise function of zinc in the prostate is unknown. We are especially interested in how zinc deficiency or supplementation may influence the development of prostate cancer. Prostate cancer is the second leading cause of cancer deaths in American men, and most elderly men have some abnormal prostate cells. Still, the cause of prostate cancer is unclear. Some of the risk factors include family history, age, and diet. The normal human prostate accumulates the highest level of zinc of any soft tissue in the body, but we don't know why. However, cancerous prostates have much less zinc than normal prostates, and several studies have implicated impaired zinc status in the development and progression of prostate malignancy. There is also some evidence that increased dietary zinc is associated with a decrease in the incidence of prostate cancer. We have shown in various cell types that changes in intracellular zinc dramatically affects DNA damage and repair, and, hence, the risk of cancer. It is possible that dietary zinc deficiency will increase a man's risk for oxidative DNA damage in prostate cells. Zinc supplementation strategies may not only aid in the prevention of cancer, but could also play an important role in limiting its malignancy. As an antioxidant and a component of many DNA repair proteins, zinc plays an important role in protecting DNA from damage. Zinc also functions as an anti-inflammatory agent and can promote programmed cell death, or apoptosis. Thus, zinc supplementation has the potential to target multiple points of the carcinogenesis cascade.

The efficacy of zinc supplements in preventing prostate cancer is controversial. Although several studies have shown that high cellular zinc levels inhibit prostate cancer cell growth, a recent epidemiological study showed an **increased risk** for prostate cancer in men who took **high-dose zinc supplements**. Increased cancer risk was seen with very high-dose (over 100 mg/day) or long-term (more than 10 years) zinc supplement use. The current tolerable upper intake level for zinc is 40 mg/day, established by the U.S. Institute of Medicine. Thus, it is possible that the subjects in the epidemiological study could have been in the toxic range of zinc intake. As with most therapeutics, higher doses do not always equate with an increase in efficacy.

The goal of our studies was to identify the mechanisms by which zinc can affect prostate health and the development of prostate cancer. We hypothesize that zinc functions to protect the prostate from oxidative damage and maintains DNA integrity in prostate epithelial cells. We also propose that zinc supplementation will be beneficial in decreasing susceptibility to prostate cancer by protecting from oxidative damage, enhancing DNA repair, and limiting uncontrolled cell proliferation.

There are two distinct phases of prostate cancer development. In its early stages, prostate cancer is hormone dependent, requiring the male hormone androgen to grow. As the cancer progresses, it becomes androgen independent, no longer requiring androgens to grow. Due to the two distinct phases of prostate cancer, we used both early- and late-stage human prostate cancer cell lines in our research. In addition, we examined benign prostate hyperplasia cells. Although these cells are not necessarily pre-cancerous cells, they represent a stage of increased growth. We compared the cancer and hyperplasia cells to normal prostate cells. These four cell types helped us to determine at what stage of carcinogenesis zinc would be most beneficial and how zinc levels affect prostate cancer development.



We treated late-stage androgen-independent prostate cancer cells, early-stage androgen-dependent prostate cancer cells, and benign prostate hyperplasia cells with doses of zinc ranging over five-fold concentrations. We then examined the growth and viability of these cells (see graph). Surprisingly, zinc had little effect on the viability of the prostate cancer cells, but **even low zinc treatments resulted in a marked decrease in cell viability of the benign prostate hyperplasia cells.** A similar response pattern was seen when cell growth was examined after zinc treatment.

We next examined molecular changes in the benign prostate hyperplasia cells treated with zinc. These experiments revealed that zinc induced programmed cell death, or apoptosis, in these cells.

To examine the effect of zinc deficiency, we grew normal prostate epithelial cells in either zinc-deficient or zinc-adequate growth medium. Zinc deficiency induced single strand DNA breaks and oxidative stress in the normal prostate epithelial cells. To better understand the mechanisms by which zinc deficiency may cause damage, we examined changes in gene expression using microarray analysis. Since zinc deficiency increases oxidative stress and DNA damage, we expected genes involved in DNA repair to be upregulated due to zinc deficiency. However, initial analysis did not find any changes in the expression of genes associated with DNA repair. Although this result is surprising, it may indicate that zinc deficiency impairs the ability of these cells to respond to DNA damage by increasing DNA repair. Other genes related to oxidative stress and cell proliferation were also affected by zinc deficiency.

Overall, our research suggests that zinc supplementation may be more helpful in the early stages of cancer development rather than as cancer treatment. Of course, our results are limited to human cells in culture. Additionally, zinc deficiency in normal prostate epithelial cells not only induces DNA damage itself, but also may impair the cell's ability to respond to DNA damage, increasing the risk of prostate cancer development. **Adequate zinc levels are essential for maintaining healthy prostate cells**, but zinc supplementation may not prevent already cancerous prostate cells from growing.

Our future studies will explore the effects of both zinc deficiency and supplementation on the development of prostate tumors in animals. We also plan to examine associations between dietary zinc status and the risk of prostate cancer in people. These studies will help to define the role of zinc in maintaining prostate health.

Last updated May, 2005

ADEQUATE ZINC INTAKE PROTECTS DNA

Source: Life Extension Foundation, http://www.lef.org/newsletter/2009/0828_Adequate-Zinc-Intake-Protects-DNA.htm

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Researchers from the Linus Pauling Institute at Oregon State University, Children's Hospital Oakland Research Institute, and the University of California, Davis report in the August, 2009 issue of the *American Journal of Clinical Nutrition* that reducing dietary zinc is associated with increased breakage of peripheral blood cell DNA strands, while restoring zinc to normal levels reduces breakage. Zinc deficiency is estimated to affect 2 billion people worldwide, and is believed to elevate the risk of several chronic diseases, including cancer. The ability of zinc to increase DNA repair, in addition to its role as an antioxidant, may be responsible for its protective effect.

For the first 13 days of the current study, nine healthy men received a diet that contained 11 milligrams zinc per day to ensure adequate zinc status. The subjects then underwent a period of zinc depletion during which they received liquid diets containing 0.6 milligrams zinc for seven days, followed by a diet containing 4 milligrams zinc for 35 days. During the first 21 days of the low zinc diet, participants received 1.3 grams per day of phytate, which inhibits zinc absorption. On the 56th day of the study, the participants were switched back to the zinc replete diet provided at the beginning of the study, and continued on this diet for 18 days with the addition of supplemental zinc for the first 7 days of this period. Fasting blood samples drawn at the beginning and end of the study and at several intermediate points were analyzed for DNA damage, plasma zinc levels, and antioxidant status.

By the end of the period during which the subjects received zinc-depleted diets, DNA strand breaks increased by an average of 57 percent compared to the beginning of the period, indicating that six weeks of reduced zinc intake significantly increases DNA damage in peripheral blood cells.

These increases proved to be reversible by restoring adequate zinc intake, since DNA strand breaks decreased by 39.9 percent by the end of the study.

The researchers also observed a decline in DNA damage during the 13-day baseline zinc-adequate period, suggesting that the participants may have had DNA damage prior to enrollment. Plasma F2-isoprostanes, which indicate oxidative stress, and total antioxidant capacity did not vary significantly over the course of the study.

The study is the first, to the authors' knowledge, to report DNA damage in human peripheral blood cells associated with zinc deficiency. "Overall, these data suggest that dietary zinc status affects DNA damage in peripheral blood cells and that adequate zinc status may be essential to maintain DNA integrity in humans," the authors write. "Importantly, the alterations in DNA integrity occurred before significant changes in plasma zinc were detected."

ZINC AND MALE SEXUAL HEALTH

Source: http://www.lef.org/magazine/mag98/july98_cover.html

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Complementing all of the above, adequate zinc levels are essential for hormonal activity and reproductive health, as well as for normal, physiological function in both men and women.

In adult males, the testes and prostate have particularly high concentrations of zinc. The sites where male hormones attach to cells (androgen receptors) require zinc in order to function.

Zinc deficiency substantially reduces testosterone levels, sperm production and muscle endurance. Research suggests that zinc deficiency also may reduce the life span of ejaculated sperm.

A recent study examined marginal zinc deficiency in young men, 27 to 28 years of age, and older men from 55 to 73. When young men were put on diets in which zinc intake was restricted, their serum testosterone levels declined by an average of 73.4 percent after 20 weeks.

In contrast, when older men with marginal zinc deficiency were given oral zinc supplementation for three to six months, their serum testosterone levels increased by an average of 92.8 percent. I

In fact, the elderly men taking a zinc supplement had serum testosterone levels 50.9 percent higher than the young men whose dietary zinc was restricted.

Another study demonstrated that only five weeks of dietary zinc restriction in young men significantly reduced serum testosterone levels, as well as the amount of ejaculated semen.

While zinc deficiency is prevalent throughout the world, clinical evaluation of mild deficiency is uncertain. A 1994 study noted, "Suspicions that mild zinc deficiency is common among the elderly cannot be confirmed or refuted because definitive indicators of zinc status are lacking."

The authors point out, **"Decreased testosterone levels, problems with wound healing, and age-associated energy [deficient energy or immune function] may all be related to marginal zinc status in the elderly."**

They also note that serum zinc levels decrease with age, and that the ability to absorb zinc is also decreased with age. However, "The detection of mild zinc deficiency remains difficult and impractical," they note. Conventional indicators such as serum zinc levels and alkaline phosphatase levels do not respond in a consistent way to changes in zinc intake. The authors studied the enzyme 5'-nucleotidase, which they propose as a potentially more reliable indicator of zinc status.

Much of our detailed understanding of the hormonal mechanisms involved in zinc deficiency derives from studies conducted on rats. One study found that the testicular cells of zinc-deficient rats lost their ability to convert lipids into sex hormones. Other rat studies have found that zinc deficiency significantly reduces the concentration of androgen receptors sites in reproductive organs and the liver.

The authors note that the effects of zinc deficiency on liver metabolism and binding of sex hormones acts in a similar way to the effects on the body of alcohol or castration. They conclude that such zinc deficiency "plays a pathogenic role in feminization and reproductive dysfunction."

PUMPKIN SEEDS SHOWN TO BOOST SEX DRIVE

Source: by: Sheryl Walters http://www.naturalnews.com/023828_pumpkin_seeds_zinc.html

(NaturalNews) Research shows that pumpkin seeds are a great libido booster. Pumpkin seeds are one of nature's most perfect foods. They taste delicious, make great snacks, and add nutrient rich flavor and texture to salads and many other dishes. They contain many libido vitamins including the B vitamins, and vitamins E, C, D, and K. They also contain essential sex drive minerals like calcium, potassium, niacin, and phosphorous.

Most importantly, pumpkin seeds contain high loads of zinc, which is important for preventing testosterone deficiency in men.

As men begin to age, there is a natural decline in zinc. A zinc deficiency can lead to prostate enlargement, as well as other male sexual health problems including impotency. This is due to the fact that prostate tissues are highly dependent on zinc.

Zinc is one of the primary nutrients in sperm production, and increases sperm count and sperm motility. High zinc levels also reduce the risk of prostate disease.

Adequate zinc also prevents the formation of dihydrotestosterone (DHT). When testosterone levels decline, the prostate gland converts the testosterone to dihydrotestosterone. DHT breaks down testosterone, causing a range of problems including prostate enlargement, balding in men, and potentially even prostate cancer.

Pumpkin seeds can also help to sustain lubrication and boost female sex drive.

Myosin, an amino acid found in pumpkin seeds, is known to be essential for muscular contractions, which may be necessary for good sex.

Pumpkin seeds contain omega-3 fatty acids, which are the precursors of prostaglandins. Prostaglandins are hormone-like substances that play a key role in sexual desire and sexual health. Essential fatty acids also natural antidepressants and help balance the mind, which is vital for an optimum sex life.

In Addition to higher sex drive, pumpkin seeds may also provide these benefits:

- Improved Bladder Function
- Prevention of Osteoporosis
- Natural Anti-Inflammatory
- Prevention of Kidney Stones
- Lowered Cholesterol
- Cancer Prevention
- Prevention of Heart Disease and Decreased Libido