Dynamic Chiropractic

CHIROPRACTIC (GENERAL)

Subluxations, Inflammation, and Zinc

Anthony Cichoke, MA, DC, DACBN

John is 42-years-old and works in a warehouse, lifting heavy boxes, loading and unloading trucks. Last week, while bending over to pick up a heavy box, he felt a sudden, sharp, stabbing pain across his low back. Repeated trips to the chiropractor have produced only temporary relief, although John is receiving the full range of chiropractic care, including nutritional supplements. John not only has a subluxation, but also inflammation, and zinc could be the answer.

Probably the most frequent reason a patient comes to the chiropractor's office is pain -- pain somewhere in the body's joints or soft tissue, that is, subluxations, strains, and sprains. Pain, along with swelling, heat, redness, and loss of function are the cardinal signs of inflammation. Zinc, as an antioxidant, fights inflammation.

Inflammation is a serious problem with subluxations, sprains, strains, myofascial pain syndrome, and systemic problems. Free radicals and cross-linked tissues are a major problem in inflammatory conditions of the joints and connective tissue fibers.

In a subluxation, the ligament/joint facets (as well as the surrounding connective tissue) can be stretched or torn. Scar tissue is formed as a result of injury, inflammation, and repair. Cross-linking and free radical formation of the injured fibers are a part of this process with resulting decrease in flexibility. This same sequence of events occurs in any subluxation, strain, or sprain. Antioxidents, such as zinc, can help fight cross-linking and free radicals.

Collagen is the main protein component in skin and connective tissue. Its molecules can be fused together or cross-linked by free radicals. When this occurs, connective tissue becomes leathery and rigid.

Free radicals are highly reactive molecules that destroy cell membranes and damage DNA. They are formed during the processes of cellular metabolism, and are normally detoxified by the body's free radical defense system. Free radicals cause proteins to be incorrectly synthesized and can lead to cell death.

Zinc as an Antioxidant

As an antioxidant, zinc has at least four roles: 1) protects vital biomolecules (sulfhydryl compounds) from oxidation; 2) competes with pro-oxident metals (iron and copper) for binding sites, thus decreasing their ability to form free radicals; 3) limits production of free radicals, such as superoxide and malondialdehyde (MDA), produced naturally by the body; 4) essential part of potent antioxidant enzymes zinc metallothionein, and superoxide dismutase (SOD). In fact, results from a recent study at the University of California, Davis, indicated that zinc monomethionine (a potent new form of zinc) reduced excessive levels of superoxide free radicals produced by white blood cells.

Zinc plays many vital roles in human nutrition, including:

- antioxidant capability

- eye health (preventing macular degeneration)
- growth and development
- hair and skin health
- immune function, especially white cell development
- free radical fighter
- sexual development and reproduction
- wound healing
- sense of taste and appetite
- fights aging

What can affect zinc status in the body? Before his injury, our worker John, had been in top physical condition. He ran, lifted weights, and exercised daily. However, he had just gone through a very sticky divorce and was recovering from a prolonged bout of bronchitis. Further, he had a high cholesterol level and had gone on a low fat, vegetarian diet. John was a walking zinc deficiency and an accident waiting to happen.

As we know, zinc deficiencies are most frequently caused by:

- stress
- diets high in fiber and phytate (compounds present in fruits, vegetables, and grain that actually inhibit zinc absorption -- a definite problem with vegetarians)
- illness, disease, or other inflammatory reactions
- exercise

Vitamins A, E, C, plus selenium, are most frequently used as antioxidants, but zinc is also extremely effective.

What Is the RDA of Zinc?

Zinc RDA for adult men is 15 mg./day and 12 mg. for nonpregnant women (15 mg. when pregnant, 19 mg. during the first six months of lactation, and 16 mg. during the second six months of lactation). Infants and children are 5 mg. and 10 mg. respectively. Studies show many people consume less than RDA levels and that marginal zinc deficiencies are quite frequent. Studies show many people consume less than RDA levels and that marginal zinc deficiencies are quite frequent.

Zinc Supplements

Unfortunately, the best sources of zinc (red meat, liver, eggs, and oysters) also tend to be high in cholesterol and fat. Because of depleted soil, environmental and food pollution, food additives, preservatives, etc., we can't get adequate zinc in our diet. Therefore, supplementation seems to be the answer.

Inorganic zinc supplements (i.e., zinc oxide and zinc sulfate) are poorly absorbed. However, chelated forms, such as zinc monomethionine, are much more bioavailable. In fact, a recent University of Illinois study has shown that the bioavailability of zinc monomethionine (when compared to ordinary zinc supplements) increased as the phytate/fiber content of the diet increased.

Zinc Safety

Research has shown that an excessive amount of zinc can decrease immune function and block copper absorption. Therefore, doses of zinc should be limited to 50 mg. per day. Further certain zinc ligands may pose a safety hazard. A recent report indicates that citric acid, the ligand in zinc

citrate, increases the uptake of lead (a toxic metal). And picolinic acid, the ligand in zinc picolinate, removes iron from cells. In one report, elderly people taking RDA-levels of zinc picolinate developed anemia.

Neither lead uptake, nor anemia, are caused by zinc monomethionine. In addition, methionine, the ligand in zinc monomethionine, provides potent antioxidant protection.

Zinc Highlights

Therefore, it seems that adequate levels of zinc are critical for the successful, long-term treatment of subluxation, plus connective tissue problems, such as strains and sprains. As an antioxidant and free radical fighter, zinc works in many ways, helping to "hold" the adjustment. Although we think we have adequate intakes of zinc daily, we are most likely deficient. Diet won't do it, thus supplements appear necessary. Of all the zinc supplements, zinc monomethionine seems to be the most effective, helping the chiropractic treatments in rehabilitating injured patients, such as John.

Anthony J. Cichoke, MA, DC, DACBN
Portland, Oregon

APRIL 1994