



*Dynamic Chiropractic* – January 29, 1996, Vol. 14, Issue 03

## **Manganese**

By G. Douglas Andersen, DC, DACBSP, CCN

**Before other exotic connective tissue supplements such as mucopolysaccharides, chondroitin sulfates, glucosamine, and S-adenosyl methionine came out, there was manganese.**

**Manganese is a micromineral long associated with musculoskeletal healing. It is necessary to activate enzymes needed for collagen and proteoglycan synthesis, the major components of connective tissue. It is also part of the superoxide dismutase molecule that resides inside the mitochondria. So manganese is needed for connective tissue synthesis and is a component of the antioxidant system.**

### **Absorption**

**Manganese is generally considered a poorly absorbed mineral. Fiber, phosphorus, oxalates, and iron can all reduce absorption of manganese. Alkalinity can also decrease manganese uptake. In a very interesting study, researchers showed that ingestion of 500 mg of calcium carbonate antacids turned a positive manganese balance into a negative one. The participants in this study had dietary levels of 6 mg per day. An interesting side note to this study was that milk ingestion did not reduce manganese levels, even though it is rich in phosphorus and calcium.**

**The most obvious aid to manganese absorption is chewing your food well and consuming meals in a relaxed environment. Vitamin C also appears to aid in the absorption of manganese.**

### **Daily Recommendations**

**There is no RDA for manganese. The estimated safe and adequate daily dietary intake ranges from 2-5 mg per day for adults, with the average daily intake being approximately 4 mg. Various studies have shown that most Americans consume from 1-9 mg per day, depending on the types of foods consumed.**

## **Dietary Sources**

**The best whole food sources for manganese are brown rice, rice bran, wheat bran, wheat germ, molasses, beans, nuts, and tea. Good food concentrate sources include alfalfa and kelp.**

## **Therapeutics**

**Ever since I took my first nutrition class in chiropractic school (circa 1983), I was told to give manganese for conditions such as sprains, strains, intervertebral disc disease, and osteoarthritis. When the famous case of basketball player Bill Walton was published, osteoporosis was added to the list. Of these conditions, only osteoporosis has human studies that indicate a possible need for manganese (based on low serum levels of manganese in patients with osteoporosis). As for sprains, strains, disc disease, and osteoarthritis, I was surprised to learn that manganese recommendation is based on extrapolation of its biochemical importance, and not on human studies. There is evidence that if a patient is deficient in manganese, supplementation will be beneficial for healing. There is no human scientific evidence that a person who has normal manganese levels and is injured will heal faster if excessive manganese is consumed.**

## **Safety**

**Manganese appears to be quite safe. There are no reported cases of manganese toxicity from supplements. Workers exposed to high levels of manganese in the air (minors exposed to ores that contain manganese) can develop Parkinson-like symptoms or other central nervous system problems.**

## **Supplemental Sources**

**Manganese sulfate is the most commonly used form. It is also the most poorly absorbed. The more bioavailable forms of manganese include citrate, gluconate, ascorbate, or other amino acid chelates. Other poorly absorbed forms of manganese include manganese oxide and manganese chloride.**

## **Dosing**

**Dosing for manganese from organic chelate forms such as ascorbate, gluconate, aspartate, citrate, picolinate, or other amino acid chelates should range from 5 to 50 mg per day, with 10 to 25 mg being more than adequate. Dosing for manganese sulfate, the most common form, along with manganese**

oxide and manganese chloride, can range from 50 to over 100 mg per day. These higher recommendations are because manganese sulfate, oxide, and chloride are not absorbed as well as the organic chelate forms.

### **Conclusion**

Supplementation of manganese appears to be quite safe, with a risk-benefit ratio that seems to favor its use for the healing of musculoskeletal injuries. Based on my literature review, I do not recommend clinicians place injured patients on a straight manganese supplement. I do feel that using supplements designed for musculoskeletal healing, which include manganese at greater levels than the estimated safe and adequate dietary intake, and include other nutrients such as vitamin C and zinc, should be considered, especially if the patient does not consume an optimal diet. I must stress that this recommendation is based on the extrapolation of manganese's biochemical functions along with its record of safety.

### ***References***

- 1. Bucci. Nutrition Applied to Injury Rehabilitation and Sports Medicine. CRC Press. Boca Raton, Florida. 1995.**
- 2. Ensminger and Konlande. Foods and Nutrition Encyclopedia. Pegasus Press. Clovis, California. 1983.**
- 3. Martin, Mayes, Rodwell, & Granner. Harper's Review of Biochemistry. Lang Medical Publications. Los Altos, California. 1985.**
- 4. Krischmann & Dunne. Nutrition Almanac, Second Edition. McGraw-Hill. 1984.**

**5. Andersen. The role of nutrition in rehabilitation and sports medicine, interview with Dr. Luke Bucci, Part I. June 19, 1995. Dynamic Chiropractic.**

*G. Douglas Andersen, DC*

*Brea, California*

---

Click [here](#) for more information about G. Douglas Andersen, DC, DACBSP, CCN.



**Page printed from:**

**[http://www.chiroweb.com/mpacms/dc/article.php?id=39036&no\\_paginate=true&p\\_friendly=true&no\\_b=true](http://www.chiroweb.com/mpacms/dc/article.php?id=39036&no_paginate=true&p_friendly=true&no_b=true)**