What is Manganese?

Manganese is a trace mineral which is very similar to iron. It was first discovered to be an essential nutrient in 1931. The average adult body contains a total of 10 to 12 mg of manganese, commonly in the muscles, brain, kidneys, pancreas and the liver.

Why is Manganese important and what does it do in the body?

Manganese has a role in many body functions and is important for the synthesis of cholesterol and fatty acids. It is also highly important in many enzyme systems especially with Super Oxide Dismutase (SOD) an enzyme found in all body cells that supports the neutralization of damaging free radicals that can damage the body, such as super oxide. Due to its ability to increase SOD levels, manganese has been used to help individuals with strained, sprained or inflamed muscles and joints. Manganese is also involved in blood sugar control. It lowers glucose tolerance factor (GTF) which can reduce insulin production and impact the level and control of blood glucose in the body. The glucose level, if unchecked, may lead to an increased risk of diabetes.

Manganese is plays a key role in the metabolism of carbohydrates, fats and proteins, to release cellular energy. It helps to make the thyroid hormone, thyroxine, and therefore supports thyroid function. It also plays a part in the production of breast milk and sex hormones as well as combining with PABA (para-aminobenzoic acid is a chemical found in folic acid -vitamin B9) which stimulates the pituitary gland. The pituitary gland is located in the brain. It is sometimes called the “leader of the endocrine orchestra” as it plays such an important role in stimulating the other endocrine glands to produce their hormones. The hormones secreted by the pituitary include growth hormone and adrenocorticotropic hormone (ACTH) which is vital in the body’s stress response. It has been shown to support individuals with epilepsy, as it is a critical trace mineral that supports nerve function. Manganese is also required for bone growth and, in association with vitamin K, to aid in blood clotting.

What amount of Manganese do you need each day?

There is limited research showing exactly how much manganese is required by the body on a daily basis.

The DRI (Daily Recommended Intake) /RDA (Recommended Daily Allowance) of dietary Manganese are listed on the next page:

Please Note: By definition, the DRI/RDA recommendations apply only to 98% of healthy individuals and are not sufficient for those with higher nutrient requirements based upon their biochemical individuality, genetics, health status, medications, deficiencies, lifestyle, and toxic exposures.
The daily Adequate Intake (AI) for manganese is listed below.

Supplements and dietary intake of manganese together should not exceed 10 milligrams per day because of the risk of nervous system side effects. You should only take manganese supplements under the supervision of your health care professional; that is especially true for children.

### Adult

- Males 19 years and older: 2.3 mg
- Females 19 years and older: 1.8 mg
- Pregnant women: 2 mg
- Breastfeeding women: 2.6 mg

Pregnant women and nursing mothers should avoid intakes of manganese above the upper limit of the AI, unless under a health care professionals supervision.

### Pediatric

- Infants 0 - 6 months: 0.003 mg
- Infants 7 months - 1 year: 0.6 mg
- Children 1 - 3 years: 1.2 mg
- Children 4 - 8 years: 1.5 mg
- Males 9 - 13 years: 1.9 mg
- Males 14 - 18 years: 2.2 mg
- Females 9 - 18 years: 1.6 mg

**RECOMMENDED DAILY ALLOWANCE**
None established

**OPTIMAL DAILY ALLOWANCE**

10mg/Day
What are possible Manganese deficiency conditions and symptoms?

- Arteriosclerosis
- Dizziness
- Epilepsy
- Eye problems
- Fatigue
- Glucose intolerance
- High Cholesterol
- Impaired growth
- Insomnia
- Loss of muscle coordination
- Low sperm count
- Memory Loss
- Mood Swings and Irritability
- Osteoporosis
- Parkinson’s disease
- Poor production of breast milk
- Ringing in ears (Tinnitus)
- Schizophrenia
- Teeth grinding

What are possible Manganese excess symptoms?

Unless there is protracted elevated exposure to manganese, or excessive consumption via food and supplementation, manganese toxicity is very rare. Manganese has been associated with neurological changes and reduced learning in children and “manganese madness” in adults manifests with symptoms such as aggression, schizophrenic-like symptoms, hallucinations, sexual dysfunction and fatigue. As manganese shares the same “transporter” as iron, individuals with low iron levels may have increased risk of greater manganese absorption across the gut membrane.

What steals Manganese from the body?

- Excessive levels of antagonistic minerals including calcium, magnesium, iron, copper, zinc, cobalt and phosphorus inhibit absorption.
- Phytates: foods such as grains and legumes can bind to manganese and reduce its absorption.
- Inositol hexaphosphate (a type of beneficial fat) may depress the absorption of manganese.
- High fiber diets binds to manganese as it travels through the gut and reduce absorption.
- Tetracycline antibiotics: demecolcycline, doxycycline, Methacycline can chelate (pull out) manganese.

Antacid drugs

- Aluminium–containing antacids: Gaviscon, Maalox, Mylanta.
- Calcium-containing antacids: Mylanta, Rolaids, Tums.
- Magnesium-containing antacids: Gaviscon, Maalox and Mylanta) and Alka Seltzer.

What tests can be used to assess Manganese levels?

- Red Blood cell Manganese levels
- Urinary ammonia markers
- Arginine/ornithine ratio
What foods contain the highest amounts of Manganese?

**TOP 10 MANGANESE RICH FOODS ARE:**

1. **Rice bran**  
   20mg/100g

2. **Hazelnuts**  
   12.7mg/100g

3. **Mussels**  
   6.8mg/100g

4. **Dark chocolate**  
   4.2mg/100g

5. **Sesame seeds or tahini**  
   2.54mg/100g

6. **Pine nuts**  
   2.5mg/100g

7. **Sunflower seeds**  
   2.11mg/100g

8. **Chilli powder**  
   2.2mg/100g

9. **Edamame (roasted soybeans)**  

10. **Pecans**  
   1.3mg/100g

What are the best Manganese products?

The most bio-available forms of manganese are manganese sulphate, manganese lactate, manganese succinate, manganese gluconate and citrate salts.

**REFERENCES**

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All the statements, including product labels, supporting literature and/or product manufacturers websites have not been evaluated by FDA. These products are not intended to diagnose, treat, cure or prevent any disease.
What are the very best Manganese products to buy?

**Klaire VitaSpectrum**
Powdered multiple vitamin/mineral supplement for children with Autism Spectrum Disorders. Natural berry-pomegranate flavor. This comprehensive multiple vitamin/mineral supplement contains 28 highly bioavailable ...

**ProThera MultiThera 1**
This versatile, high-potency multiple vitamin and mineral supplement is formulated to be the primary dietary supplement for all types of patients. The amounts and ratios of nutrients are based on many years of clinical experience ...

**ProThera MultiThera 2**
Iron-fortified multi-nutrient formula. This versatile, high-potency multiple vitamin and mineral supplement is formulated to be the primary dietary supplement for all types of patients. The amounts ...

**ProThera MultiThera 3**
Iron- and copper-free multiple formula. Both iron and copper have been eliminated from this version of MultiThera® to address the needs of patients who may have elevated tissue identical in all other respects to MultiThera® 1 ...

**Pure Caps Womens Pure Pack**
Women's Supplement to Support Bone and Heart Health. Now With Metafolin® L-5-MTHF. Sizes Available 30 packets. Each packet contains 6 different supplements, including ...

**Pure Caps Mens Pure Pack**
Regardless of your walk of life, all men need to ensure that they get enough of an array of important nutrients. However, who wants to spend their time picking out supplements for a daily …