**MANGANESE**

**MAIN FUNCTIONS**
- Structural component of antioxidant enzymes
- Facilitates bone development
- Helps make and break down glucose and amino acids

**GOOD SOURCES**
- **Whole Grains**
  - Brown Rice (cooked), ½ cup, 1.1 mg

- **Nuts**
  - Pecans, 1 ounce (19 halves), 1.3 mg

- **Pineapple**
  - Pineapple (raw, chunks), ½ cup, 0.77 mg

**DAILY RECOMMENDATION**
- Men: 2.3 mg
- Women: 1.8 mg

**SPECIAL NOTES**
- Manganese deficiency is not common.
- Excessive manganese is neurotoxic and can cause irreversible brain damage. Tolerable Upper Intake Levels from food and supplements range from 2 mg/day for infants to 11 mg/day for adults.
- Newborns, children, and individuals diagnosed with iron deficiency or chronic liver disease are especially sensitive to manganese overexposure.