



Manganese	
Description	Manganese is an essential trace mineral.
Function	Manganese causes some enzymes to activate so they begin to work. It is also essential for the formation of certain enzymes, one of which is superoxide dismutase, a powerful antioxidant enzyme that neutralises potentially damaging free radicals.
Human Requirements	EU RDA: Not established.
Dietary Intake	In the UK, the average adult diet provides 4.6-5.4 mg daily ¹
Food Sources	Nuts, pulses, wholemeal bread and cereals, green vegetables.
Deficiency Symptoms¹	Manganese deficiency in individuals consuming mixed diets is very rare. Symptoms thought to be associated with deficiency include weight loss, dermatitis, hypocholesterolaemia, depressed growth of hair and nails and reddening of black hair.
Precautions / Contra-Indications	Safe Upper Level: 4mg ²
Pregnancy & Breastfeeding	No problems reported at normal doses.
Adverse Effects	None known, when administered orally.
Interactions¹	None reported.
References	<ol style="list-style-type: none"> 1. Mason, P. Dietary Supplements. Pharmaceutical Press, London, 2001. 2. Expert Group on Vitamins and Minerals, 2003.