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The safety and efficacy of high-dose chromium.

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The data on the standards for chromium requirements and the safety of various chromium compounds and doses are reviewed. The 350-fold difference between the acceptable daily intake and the calculated reference dose for humans of 70 mg per day seems without precedent with respect to other nutritional minerals. Previous claims of mutagenic effects of chromium are of questionable relevance. While studies have found DNA fragmentation (clastogenic effects) by chromium picolinate, anecdotal reports of high-dose chromium picolinate toxicity are few and ambiguous. The beneficial effects of chromium on serum glucose and lipids and insulin resistance occur even in the healthy. Serum glucose can be improved by chromium supplementation in both types 1 and 2 diabetes, and the effect appears dose dependent. Relative absorption of various chromium compounds is summarized and the mechanism of low molecular weight chromium binding substance (LMWCr) in up-regulating the insulin effect eight-fold is discussed. There is evidence of hormonal effects of supplemental chromium besides the effect on insulin. Chromium supplementation does result in tissue retention, especially in the kidney, although no pathogenic effect has been demonstrated despite considerable study.

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