

# Magnesium in diabetes mellitus

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## Abstract

A tendency for magnesium deficiency in patients with diabetes mellitus is well-established. Glucosuria-related hypermagnesiuria, nutritional factors and hyperinsulinaemia-related hypermagnesiuria all can contribute. The plasma magnesium level has been shown to be inversely related to insulin sensitivity. Magnesium supplementation improves insulin sensitivity as well as insulin secretion in patients with type 2 diabetes. Nevertheless, no beneficial effects of oral magnesium supplementation has been demonstrated on glycaemic control either in patients with diabetes type 1 or 2. Oral magnesium supplementation reduced the development of type 2 diabetes in predisposed rats. There are some indications that magnesium decreases blood pressure, but negative results have been observed in trials that were, however, not designed to test effect on blood pressure as primary parameter. Patients with (severe) retinopathy have a lower plasma magnesium level compared to patients without retinopathy and a prospective study has shown the plasma magnesium level to be inversely related to occurrence or progression of retinopathy. Further study on magnesium (supplementation) is warranted in the prevention of type 2 and of (progression of) retinopathy as well as a means to reduce high blood pressure.

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