

Abstract

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Oral magnesium supplementation improves vascular function in elderly diabetic patients.

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BACKGROUND: Magnesium (Mg) ions directly influence vascular tone and responsiveness and are cofactors for acetylcholine-induced endothelium-dependent relaxation. Alterations in extracellular Mg are able to modify the formation and release of nitric oxide (NO), altering arterial smooth muscle tone. Previous *in vivo* studies in humans have shown that parenteral or oral Mg supplementation increase endothelial-dependent vasodilation.

OBJECTIVE: The aim of the present study was to evaluate the effects of Mg oral supplementation on endothelial function in elderly diabetic and hypertensive subjects.

METHODS: Sixty elderly (≥ 65 years) diabetic patients were recruited (mean age: 71.1 \pm 6.1 years; M/F: 35/25). Endothelial function, evaluated by non-invasive flow-mediated dilatation of the brachial artery, as well as anthropometric and laboratory data, including ionized Mg (Mg-ion), were measured in all patients before and after one-month. Thirty patients underwent oral Mg supplementation with 4.5 g/day of Mg pidolate (368 mg/day of Mg ion), while the rest were used as a control group. The usual management of diabetes and hypertension was not changed during the month of study participation for all the patients.

RESULTS: In the group of patients that underwent Mg supplementation, Mg-ion concentration significantly increased from 0.42 \pm 0.05 mmol/L to 0.49 \pm 0.06 mmol/L; $p < 0.05$. Mg intervention resulted in a significant improvement of the post-ischemic endothelial-dependent flow-mediated dilation (from 3.3 \pm 3.6% to 8.4 \pm 3.9%; $p < 0.05$). No significant differences were found, either in ion-Mg or endothelial function, in the control group.

CONCLUSION: In conclusion, the present study suggests that oral Mg improves endothelial function in diabetic elderly subjects.

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