Oral magnesium supplementation improves the metabolic profile of metabolically obese, normal-weight individuals: a randomized double-blind placebo-controlled trial

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Abstract

BACKGROUND AND AIMS:

We undertook this study to determine the efficacy of oral magnesium supplementation in the improvement of the metabolic profile and blood pressure in metabolically obese, normal-weight (MONW) individuals.

METHODS:

A total of 47 MONW individuals with hypomagnesemia were enrolled in clinical a randomized double-blind placebo-controlled trial. Individuals in the intervention group received 30 mL of MgCl₂ 5% solution (equivalent to 382 mg of magnesium) and individuals in the control group 30 mL of placebo solution, once daily during 4 months. In the absence of obesity or overweight, the presence of fasting glucose levels ≥ 100 mg/dL, HOMA-IR index ≥ 3, triglyceride levels ≥ 150 mg/dL and/or systolic and diastolic blood pressure ≥ 140 and 90 mmHg defined the presence of the MONW phenotype. Hypomagnesemia was defined by serum magnesium concentration ≤ 1.8 mg/dL.

RESULTS:

At basal conditions there were no significant differences between groups. At the end of follow-up, changes in the mean of systolic (-2.1 vs. 3.9% mmHg, p < 0.05) and diastolic (-3.8 vs. 7.5% mmHg, p < 0.05) blood pressures, HOMA-IR index (-46.5 vs. -5.4%, p < 0.0001), fasting glucose (-12.3 vs. -1.8% mg/dL, p < 0.05) and triglyceride levels (-47.4% vs. 10.1% mg/dL, p < 0.0001) were significantly lower in the subjects who received MgCl₂ compared with individuals in the control group.

CONCLUSIONS:

Oral magnesium supplementation improves the metabolic profile and blood pressure of MONW individuals.