

# Abstract

Diabetes Care. 2009 Nov 10. [Epub ahead of print]

## Relations of dietary magnesium intake to biomarkers of inflammation and endothelial dysfunction in an ethnically diverse cohort of postmenopausal women.

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**OBJECTIVE:** Although magnesium (Mg) may favorably affect metabolic outcomes, few studies have investigated the role of Mg intake in systemic inflammation and endothelial dysfunction in humans.

**RESEARCH DESIGN AND METHODS:** Among 3,713 postmenopausal women aged 50-79 y in the Women's Health Initiative Observational Study and free of cardiovascular disease, cancer, and diabetes at baseline, we measured plasma concentrations of high-sensitivity C-reactive protein (hs-CRP), interleukin 6 (IL-6), tumor necrosis factor alpha receptor 2 (TNF-alpha-R2), soluble intercellular adhesion molecule-1 (sICAM-1), soluble vascular cell adhesion molecule-1 (sVCAM-1), and E-selectin. Mg intake was assessed using a semi-quantitative food frequency questionnaire.

**RESULTS:** After adjusting for age, ethnicity, clinical center, time of blood draw, smoking, alcohol, physical activity, energy intake, BMI, and diabetes status, Mg intake was inversely associated with hs-CRP ( $p$ -for-trend=0.003), IL-6 ( $p$ <.0001), TNF-alpha-R2 ( $p$ =0.0006), and sVCAM-1 ( $p$ =0.06). Similar findings remained after further adjustment for dietary fiber, fruit, vegetables, folate, and saturated and trans-fat intake. Multivariable-adjusted geometric means across increasing quintiles of Mg intake were 3.08, 2.63, 2.31, 2.53, 2.16 mg/L for hs-CRP ( $p$ =0.005), 2.91, 2.63, 2.45, 2.27, 2.26 pg/mL for IL-6 ( $p$ =0.0005), and 707, 681, 673, 671, 656 ng/mL for sVCAM-1 ( $p$ =0.04). An increase of 100 mg/d Mg was inversely associated with hs-CRP (-0.23 mg/L +/- 0.07;  $p$ =0.002), IL-6 (-0.14 pg/mL +/- 0.05;  $p$ =0.004), TNF-alpha-R2 (-0.04 pg/mL +/- 0.02;  $p$ =0.06), and sVCAM-1 (-0.04 ng/mL +/- 0.02;  $p$ =0.07). No significant ethnic differences were observed.

**CONCLUSIONS:** High Mg intake is associated with lower concentrations of certain markers of systemic inflammation and endothelial dysfunction in postmenopausal women.

PMID: 19903755

