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J Am Coll Nutr. 2001 Jun;20(3):212-8.

## Potential antioxidant effects of zinc and chromium supplementation in people with type 2 diabetes mellitus.

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### Abstract

**OBJECTIVE:** To determine the effects of combined zinc (Zn) and chromium (Cr) supplementation on oxidative stress and glucose homeostasis of people with type 2 diabetes.

**DESIGN:** Tunisian adult subjects with HbA1C > 7.5% were supplemented for 6 months with 30 mg/d of Zn as Zn gluconate or 400 microg/d of Cr as Cr pidolate or combined Zn/Cr supplementation or placebo. The effects of supplementation on plasma zinc (Zn), copper (Cu), selenium (Se), urinary Zn, Cr, plasma thiobarbituric acid reactive substances (TBARS), Cu-Zn superoxide dismutase (SOD) and Se glutathione peroxidase (GPx) in red blood cells, blood lipids and lipoproteins, HbA1C and fasting glucose were measured at the beginning of the study and after six months.

**RESULTS:** At the beginning of the study, more than 30% of the subjects may have been Zn deficient with plasma Zn values less than 10.7 micromol/L, whereas levels of plasma Cu, Se and antioxidant RBC enzyme activities were in the normal ranges. Following supplementation, there were significant decreases of plasma TBARS in the Cr (13.6%), Zn (13.6%) and Zn/Cr (18.2%) groups with no significant changes in the placebo group. The value for the TBARS of the control healthy Tunisian subjects was 2.08 +/- 0.04 micromol/L and that of the Tunisian subjects with diabetes was 3.32 +/- 0.05 micromol/L. This difference of 1.24 micromol/L between the control group and the subjects with diabetes was reduced from 36% to 50% in the three supplemented groups. Supplementation did not modify significantly HbA1C nor glucose homeostasis. No adverse effects of Zn supplementation were observed on Cu status. HDL cholesterol nor interactions in Zn or Cr.

**CONCLUSIONS:** These data suggest the potential beneficial antioxidant effects of the individual and combined supplementation of Zn and Cr in people with type 2 DM. These results are particularly important in light of the deleterious consequences of oxidative stress in people with diabetes.

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Antioxidant effects of chromium supplementation with type 2 diabetes me [J Agric Food Chem. 2004]

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