

Abstract

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Effects of short-term chromium supplementation on insulin sensitivity and body composition in overweight children: randomized, double-blind, placebo-controlled study.

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OBJECTIVE: Excessive body weight is inversely associated with insulin sensitivity in children and adults. Chromium supplementation produces modest improvement in insulin sensitivity in adults. The aim of this study was to examine the beneficial effects of chromium supplementation on insulin sensitivity and body composition in overweight children simultaneously modifying lifestyle.

METHODS: Twenty-five overweight children aged 9-12 years were randomized to receive either 400 µg of chromium chloride or placebo in double-blind fashion, during a 6-week lifestyle modification regimen that included nutritional education and 3×90 min of aerobic physical activity weekly. Insulin sensitivity was demonstrated using homeostasis model assessment-insulin resistance and quantitative insulin sensitivity check index (QUICKI). Changes in body mass index (BMI; kg/m(2)), BMI Z-score, waist circumference, body composition and fasting plasma glucose were measured.

RESULTS: Although no significant benefit of chromium supplementation over placebo was evident for BMI, BMI Z-score and fasting insulin level, children who received chromium chloride demonstrated more positive changes versus the placebo group in HOMA (-1.84 ± 1.07 vs. 0.05 ± 0.42 , $P=.05$), QUICKI (0.02 ± 0.01 vs. -0.002 ± 0.01 , $P=.05$), lean body mass (2.43 ± 0.68 kg vs. 1.36 ± 1.61 kg, $P=.02$) and percentage body fat ($-3.32 \pm 1.29\%$ vs. $0.65 \pm 1.05\%$, $P=.04$). The desirable effects of chromium supplementation on insulin sensitivity and body composition were more apparent in pre-pubertal children.

CONCLUSION: These results suggest that short-term chromium supplementation can improve insulin sensitivity and body composition in overweight children.

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