

Abstract

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Nutrigenomic basis of beneficial effects of chromium(III) on obesity and diabetes.

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BACKGROUND: Insulin resistance has been shown to be the major contributing factor to the metabolic syndrome, which comprises a cluster of risk factors for metabolic aberrations such as obesity, dyslipidemia, hypertension, and hyperglycemia. Additionally, insulin resistance has been associated with the occurrence of cardiovascular disease and type 2 diabetes.

DISCUSSION: Epidemiological studies indicate that obesity and diabetes have become alarmingly prevalent in recent years. Substantial evidence suggests that dietary interventions and regular exercise greatly improve body mass index and lipid profile as well as alleviate insulin resistance. Therefore, dietary supplements such as insulin-sensitizing agents may be beneficial in the prevention and treatment of obesity and type 2 diabetes.

CONCLUSIONS: Numerous *in vitro* and *in vivo* studies suggest that chromium supplements, particularly niacin-bound chromium or chromium-nicotinate, may be effective in attenuating insulin resistance and lowering plasma cholesterol levels. Utilizing the powerful technology of nutrigenomics to identify the genes regulated by chromium supplementation may shed some light on the underlying mechanisms of chromium-gene interactions, and thus provide strategies to mitigate and prevent insulin-resistance-related disorders.

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