

Abstract

Diabetes Metab Res Rev. 2008 Jan-Feb;24(1):41-51.

Chromium picolinate and biotin combination improves glucose metabolism in treated, uncontrolled overweight to obese patients with type 2 diabetes.

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BACKGROUND: Chromium and biotin play essential roles in regulating carbohydrate metabolism. This randomized, double-blind, placebo-controlled study evaluated the efficacy and safety of the combination of chromium picolinate and biotin on glycaemic control.

METHODS: Four hundred and forty-seven subjects with poorly controlled type 2 diabetes (HbA(1c) $\geq 7.0\%$) were enrolled and received either chromium picolinate (600 microg Cr(+3)) with biotin (2 mg), or matching placebo, for 90 days in combination with stable oral anti-diabetic agents (OADs). Major endpoints were reductions in HbA(1c), fasting glucose, and lipids. Safety and tolerability were assessed.

RESULTS: Change in HbA(1c) was significantly different between treatment groups ($p = 0.03$). HbA(1c) in the chromium picolinate/biotin group decreased 0.54%. The decrease in HbA(1c) was most pronounced in chromium picolinate/biotin subjects whose baseline HbA(1c) $\geq 10\%$, and highly significant when compared with placebo (-1.76% vs -0.68%; $p = 0.005$). Fasting glucose levels were reduced in the entire chromium picolinate/biotin group versus placebo (-9.8 mg/dL vs 0.7 mg/dL; $p = 0.02$). Reductions in fasting glucose were also most marked in those subjects whose baseline HbA(1c) $\geq 10.0\%$, and significant when compared to placebo (-35.8 mg/dL vs. 16.2 mg/dL; $p = 0.01$). Treatment was well tolerated with no adverse effects dissimilar from placebo.

CONCLUSIONS: These results suggest that the chromium picolinate/biotin combination, administered as an adjuvant to current prescription anti-diabetic medication, can improve glycaemic control in overweight to obese individuals with type 2 diabetes; especially those patients with poor glycaemic control on oral therapy.

PMID: 17506119