Chromium yeast supplementation improves fasting plasma glucose and LDL-cholesterol in streptozotocin-induced diabetic rats

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Abstract

Chromium yeast supplementation has been studied for its ability to improve carbohydrate and lipid abnormalities. There have been some earlier literature-reported studies involving chromium supplementation amongst patients suffering diabetes, but the results would appear to be somewhat varied. Forty male Wistar rats (ten weeks old, 300 g in average body mass) were divided into one of four groups, namely (i) controls; (ii) controls treated with chromium yeast; (iii) diabetic controls; and (iv) diabetic rats treated with chromium yeast. In the present investigation, the effect of a four-week oral administration of chromium yeast (600 μg of Cr/kg body mass/day, by gavage) upon the glucose and lipid metabolism in streptozotocin (STZ)-induced diabetic rats was assessed. Supplemental Cr yeast decreased the fasting blood glucose amongst the STZ-diabetic rats. No significant difference was observed in plasma fructosamine levels of rats treated with chromium yeast compared to control rats. Supplemental Cr yeast did decrease the plasma low-density lipoprotein (LDL)-cholesterol level for the STZ-diabetic rats as compared to controls. We noted no significant effect of chromium supplementation upon plasma high-density lipoprotein (HDL)-cholesterol or triglycerides compared to controls. Treatment with chromium yeast significantly increased the blood and urine chromium levels for both the diabetic and normal rats compared to respective control groups. The results of these studies suggest that Cr yeast decreased the fasting blood glucose and LDL-cholesterol levels in STZ-induced diabetic rats. This raises the possibility that Cr yeast supplementation can be considered to improve carbohydrate and lipid metabolism amongst human patients featuring type 2 diabetes mellitus.