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Effect of chromium on the lipid profile in type 2 diabetes mellitus

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Dyslipidemia is one of the main characteristics of insulin resistance syndrome. The four key features of diabetic dyslipidemia are an increase in triglycerides (TG), low density lipoprotein (LDL) cholesterol, reduction in high-density lipoproteins (HDL) cholesterol and postprandial lipemia. It has been reported that chromium deficiency results in insulin resistance. This study was done to determine the effect of chromium on the lipid profile of type 2 diabetics.

Sixty patients from a diabetic clinic were randomly selected for the trial. In this group 32 randomly selected patients received 250 μg of chromium picolinate and 28 patients received the placebo. 10 ml of blood was drawn from the patients to estimate the total cholesterol (TC), LDL cholesterol, HDL cholesterol and TG at two weekly intervals.

There was no statistically significant difference in the mean values of TC, LDL cholesterol, TG and the HDL cholesterol concentrations between the groups during the trial period of 12 weeks. The percentage difference of each of the lipid fractions of the two groups at 4 weeks 8 weeks and 12 weeks after initiation of treatment were expressed as a ratio of the baseline value. The HDL cholesterol showed a statistically significant difference between the two groups, 12 weeks after initiation of treatment. ($p=0.005$).There was no statistically significant difference in the mean concentration of total cholesterol between the two groups at the end of 12 weeks of supplementation when expressed as a ratio of the baseline value ($p=0.209$). Similarly the other lipid fractions, LDL concentration and triglcerides did not show a significant difference between the two groups. The mean HDL concentration of the supplemented group improved from a baseline value of 31.3 ±1.3 mg/dL to 33.7 ±1.7 mg/dl at the end of 12 weeks. No such increase was observed in the placebo group. The mean baseline total cholesterol concentration of the supplemented group was 215 ±6.1 mg/dl and that of the placebo group was 213 ±6.0. At the end of 12 weeks these values were 224.1± 8.2 and 209.6 ±5.4 respectively. This shows that there is no significant change in the total cholesterol concentration of the two groups.

We conclude that in this clinical trial supplementation of chromium has an effect on the HDL concentration in subjects with type 2 diabetes mellitus.

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