
**Abstract**
Chromium deficiency may cause insulin resistance, hyperinsulinemia, impaired glucose tolerance, and hyperlipidemia, recovered by chromium supplementation. The effect of chromium supplementation on serum lipids and glucose tolerance was tested in a double-blind 12-wk study of 23 healthy adult men aged 31 to 60 yr. Either 200 micrograms trivalent chromium in 5 ml water (Cr) or 5 ml plain water (W) was ingested daily 5 days each week. Half the subjects volunteered for glucose tolerance tests with insulin levels. At 12 wk high-density lipoprotein cholesterol increased in the Cr group from 35 to 39 mg/dl (p less than 0.05) but did not change in the water group (34 mg/dl). The largest increase in high-density lipoprotein cholesterol and decreases in insulin and glucose were found in those subjects having normal glucose levels together with elevated insulin levels at base-line. The data are thus consistent with the hypothesis that Cr supplementation raises high-density lipoprotein cholesterol and improves insulin sensitivity in those with evidence of insulin resistance but normal glucose tolerance.