Chromium supplements, glucose, and insulin responses

Dear Sir:

The article by Althuis et al (1) in a recent issue of the Journal raises some interesting questions about the importance of chromium supplementation in persons with and without diabetes. The authors summarized data from 14 selected clinical trials evaluating different forms of chromium in healthy adults (13 studies), subjects with impaired glucose tolerance (2 studies), and subjects with type 2 diabetes (3 studies). No studies evaluating the benefits of chromium picolinate in persons with diabetes were included in the analysis. The omission of these clinical trials (2–10), involving 1349 subjects, precludes any conclusions about the benefits of chromium picolinate in persons with type 2 diabetes. In addition, the studies that were included in the analysis used poorly absorbed forms of chromium (chromium chloride, chromium yeast) or niacin-bound chromium (niacin is known to cause insulin resistance).

The authors omitted data from a study by Anderson et al (9) (n = 155) that showed significant reductions in glycated hemoglobin after chromium picolinate administration, because the study might represent a chromium-deficient population in China. However, there are no supporting data showing that this population is more chromium deficient than are the subjects included in the analysis. Data showing glucose and insulin concentrations significantly lower than those in the study by Jovanovic et al (6) (n = 20) were also mentioned but not included in the analysis. The published data from 6 other well-controlled trials using chromium picolinate in populations with type 2 diabetes (3, 5, 6, 9–11) were not included in the meta-analysis. Anderson et al (9) and Evans (11) reported that glucose and cardiovascular disease risk lipid variables (total and LDL cholesterol) were significantly lower in persons with type 2 diabetes (3 studies). No studies evaluating the benefits of chromium picolinate in persons with diabetes were included in the analysis. The published data from 6 other well-controlled trials using chromium picolinate in populations with type 2 diabetes who received 200 or 1000 μg Cr (as chromium picolinate)/d (P < 0.05 and P < 0.001, respectively) than in placebo groups. In addition, Cefalu et al (4) and Morris et al (2) suggested that chromium picolinate increases insulin sensitivity (P < 0.05) and glucose utilization (P < 0.01) and maintains normal blood glucose concentrations.

In the meta-analysis, chromium was not shown to lower normal blood glucose concentrations in healthy subjects. However, the lack of glucose-lowering effect in healthy persons should not be perceived as a lack of efficacy, because chromium supplementation has been shown to maintain healthy blood glucose concentrations, while increasing insulin sensitivity (4). The benefits of chromium picolinate may also help prevent or delay the need for antidiabetic medication, as is being investigated in our ongoing study.

The authors reported no findings of safety issues (daily doses of 10.8–1000 μg Cr) in populations with or without diabetes. These findings are consistent with the lack of adverse effects, including hypoglycemia, found by other researchers and with the fact that no upper limit has been established for chromium.

We strongly agree that additional US studies would be beneficial, especially among African Americans, because the prevalence of diabetes in that population is increasing at an alarming rate. We strongly agree with the conclusions of the authors that if dietary chromium supplementation is efficacious, it will be a great option for the treatment of persons at high risk of insulin resistance or diabetes.

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REFERENCES