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Increased insulin resistance is associated with increased urinary excretion of chromium in non-diabetic, normotensive Saudi adults.

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Abstract

The role of trivalent chromium in improving glucose tolerance is well documented. Increased urinary chromium has been reported in type 2 diabetes mellitus, but it was not clear whether this had preceded diabetes mellitus, or was caused by it. Aim was to investigate the relationship between urinary chromium and the degree of insulin resistance in non-diabetic normotensive Saudi adults. 357 healthy adults aged 18-50 years were recruited randomly in a cross-sectional study design. Anthropometric and demographic information were taken. Insulin, glucose and free fatty acids were measured in fasting blood samples. Fasting urinary chromium and creatinine were also determined. Using modified QUICKI, subjects were labeled as high insulin resistant, or low insulin resistant. High insulin resistant subjects were matched for age and sex to low insulin resistant subjects. High insulin resistant subjects had higher mean BMI ($p<0.001$), mean waist circumference ($p<0.01$), and median urinary chromium ($p<0.001$) compared to low insulin resistant subgroup. Higher urinary chromium in high insulin resistant subgroup indicates a renal lesion leading to chromium deficiency and possibly diabetes mellitus eventually. Chromium supplementation might help to protect against the development of diabetes mellitus in this group of high insulin resistant non-diabetic Saudi individuals