

**Serum Chromium Level is Increased in Jordanian Smokers, Decreased in Jordanians with Prediabetes and type 2 Diabetes, But not Altered in Jordanians with Hypertension, With**

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**Abstract:** Background: Chromium was found to be crucial for several biochemical processes in the human body, including, in particular, carbohydrate and lipid metabolism whereas the exact mechanisms of its actions have yet to be explored. Here, we asked whether low serum chromium levels are present in Jordanian smokers and Jordanians with prediabetes and type 2 diabetes (T2D), with hypertension, with overweight and obesity, and with a family history of diabetes. Methods: A total of 360 patients (120 with T2D, 120 with prediabetes, and 120 healthy controls) were recruited randomly based on the American Diabetes Association criteria. Smokers (n = 26), and patients with hypertension (n = 46), with overweight (n = 47) and obesity (n = 57), and with family history of diabetes (n = 63) were included in the tested population. Serum chromium concentration was measured using the graphite furnace atomic absorption spectrometry. Results: The results from this study revealed significant increase (P = 0.001 univariate, P = 0.038 multivariate) and significant decrease (P = 0.046 univariate, P = 0.038 multivariate) in serum chromium concentrations in smokers and people with T2D and prediabetes, respectively. In addition, serum chromium insignificantly altered (P > 0.05) in people with hypertension, with a family history of diabetes, and with overweight or obesity. Conclusions: Higher levels of serum chromium were observed in smokers, whereas lower levels were found to be present in patients with T2D and patients with prediabetes. In addition, serum chromium level may not be affected by hypertension, overweight and obesity, and family history of diabetes.