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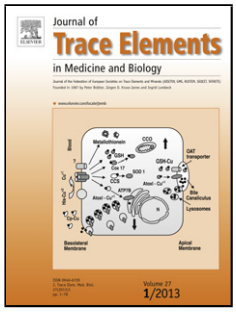

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Association of reduced zinc status with poor glycemic control in individuals with type 2 diabetes mellitus

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Short title: Zinc status and glycemic control in individuals with type 2 diabetes

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Abstract

This study evaluated the relationship between the zinc-related nutritional status and glycemic and insulinemic markers in individuals with type 2 diabetes mellitus (T2DM). A total of 82 individuals with T2DM aged between 29-59 years were evaluated. The concentration of zinc in the plasma, erythrocytes, and urine was determined by the flame atomic absorption spectrometry method. Dietary intake was assessed using a 3-day 24-h recall. In addition, concentrations of serum glucose, glycated hemoglobin percentage, total cholesterol and fractions, triglycerides, and serum insulin were determined. The insulin resistance index (HOMA-IR) and β-cell function (HOMA- β) were calculated. The markers of zinc status (plasma: 83.3 ± 11.9 μg/dL, erythrocytes: 30.1 ± 4.6 μg/g Hb, urine: 899.1 ± 622.4 μg Zn/24h, and dietary: 9.9 ± 0.8 mg/day) were classified in tertiles and compared to insulinemic and glycemic markers. The results showed that lower zinc concentrations in plasma and erythrocytes, as well as its high urinary excretion, were associated with higher percentages of glycated hemoglobin, reflecting a worse glycemic control in individuals with T2DM ($p<0.05$). Furthermore, there was a significant inverse correlation between plasma zinc levels and glycated hemoglobin percentage ($r = -0.325$, $p = 0.003$), and a positive correlation between urinary zinc excretion and glycemia ($r = 0.269$, $p = 0.016$), glycated hemoglobin percentage (r =