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Association between Soluble α-Klotho Protein and Metabolic Syndrome in the Adult Population

Yung-Wen Cheng [1], Chun-Chi Hung [2], Wen-Hui Fang [1], Wei-Liang Chen [1 3 4]

Affiliations expand

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Abstract

Klotho protein is an anti-aging protein and plays multiple roles in ion-regulation, anti-oxidative stress, and energy metabolism through various pathways. Metabolic syndrome is a combination of multiple conditions that compose of multiple risk factors of cardiovascular disease and type 2 diabetes. Gene regulation and protein expression are discovered associated with metabolic syndrome. We aimed to figure out the correlation between Klotho protein and metabolic syndrome in generally healthy adults. A cross-sectional study of 9976 respondents ≥ 18 years old from the US National Health and Nutrition Examination Survey (2007-2012) by utilizing their soluble Klotho protein concentrations. Multivariate linear regression models were used to analyze the effect of soluble Klotho protein on the prevalence of metabolic syndrome. Soluble Klotho protein concentration was inversely correlated with the presence of metabolic syndromes ($p = 0.013$) and numbers of components that met the definition of metabolic syndrome ($p < 0.05$). The concentration of Soluble Klotho protein was negatively associated with abdominal obesity and high triglyceride (TG) in the adjusted model ($p < 0.05$). Soluble Klotho protein is correlated with changing metabolic syndrome components in adults, especially central obesity and high TG levels. Despite conventional function as co-factor with fibroblast growth factor-23 (FGF23) that regulates phosphate and vitamin D homeostasis, FGF23-independent soluble Klotho protein may act on multiple signal pathways in different organs and tissue in roles of anti-aging and protection from metabolic syndrome.

Keywords: FGF23; Klotho; metabolic syndrome.

Conflict of interest statement

All authors reported no conflict of interest in this work. The authors declared that they had no competing interest.

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