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Abstract

The Effect of Higenamine Supplementation on the Fatty Acid Profiles of Serum Phospholipids †

Jelena Rasic Ozegovic [1,2,*], Marija Takic [3], Nevena Ivanovic [2], Danijela Ristic-Medic [3], Milica Vukasinovic Vesic [1,4] and Brizita Djordjevic [2]

[1] Anti-Doping Agency of Serbia, 11000 Belgrade, Serbia; milica.vukasinovic.vesic@fzs.edu.rs
[2] Department of Bromatology, Faculty of Pharmacy, University of Belgrade, 11221 Belgrade, Serbia; nevena.ivanovic@pharmacy.bg.ac.rs (N.I.); brizita.djordjevic@pharmacy.bg.ac.rs (B.D.)
[3] Centre of Research Excellence in Nutrition and Metabolism, Institute for Medical Research, National Institute of Republic of Serbia, University of Belgrade, 11221 Belgrade, Serbia; marijapo2001@gmail.com (M.T.); dristicmedic@gmail.com (D.R.-M.)
[4] Faculty of Sports "Union-Nikola Tesla", University of Belgrade, 11070 Belgrade, Serbia
* Correspondence: jelena.rasic@adas.org.rs
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Abstract: Background and objectives: Higenamine is an alkaloid found in different plant species like Aconitum japonica, Nandina domestica, Gnetum parvifolium, and Asarum heterotropoides. According to the available data in the literature, its dietary intake leads to an enhancement of lipolysis. The objective of this study was to explore whether the ingestion of a one-component higenamine supplement (75 mg/day) for three weeks would introduce some changes in the fatty acid (FA) profiles of serum phospholipids of female recreational athletes. Methods: A total of 12 female recreational athletes were included in a double-blind study, with six participants in both groups—a higenamine treatment group and placebo group. Serum phospholipids were isolated via one-dimensional thin-layer chromatography. Fatty acid methyl ester samples from the phospholipids were analyzed by a gas–liquid chromatography method. Desaturase and elongase activities were calculated from product/precursor FA ratios. Results: In the group that was undergoing higenamine treatment, a statistically significant increase in the levels of linolenic acid, a total n − 6 polyunsaturated FAs (PUFAs), and an n − 6/n − 3 FA ratio were observed. But saturated palmitic acid and monounsaturated palmitoleic and oleic acid, as well as consequent total saturated FAs and monounsaturated FA acids decreased in serum phospholipids. Also, after 3 weeks of higenamine supplementation, arachidonic n − 6 acid and docosapentaenoic n − 3 acids levels were significantly decreased, and estimated delta-5 desaturase activity (arachidonic/dihomo-gamma-linolenic acid ratio) was decreased too. In the placebo group, a significant change was increased levels of oleic acid compared to baseline levels. Conclusion: According to the results obtained for the FA status of serum phospholipids, treatment with higenamine was followed by a modulation of serum phospholipid FA profiles. Furthermore, this could influence the desaturation/elongation metabolic pathway of endogenous FA metabolisms, leading to a decrease in delta-5 desaturase activity and consequently lower levels of long-chain PUFAs. For further discussion, it is necessary to assess the dietary intake of study participants.

Keywords: higenamine; recreational athletes; fatty acid profile; serum phospholipids; dietary supplements

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