

Abstract

Acute Aronia Juice Consumption Prior to Half-Marathon Races Affects Proteinuria-Induced Changes of Serum Protein Profiles [†]

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Abstract: Physical activity could lead to dehydration and post-exercise proteinuria. In several animal studies, it has been noticed that aronia juice consumption shows favorable effects on the kidney function. Therefore, the primary aim of this study was to examine the influence of acute aronia juice supplementation before simulated half-marathon races on serum protein profiles that reflect both changes induced by dehydration and proteinuria in ten recreational runners. The serum protein profiles were determined before (T0), 15 min (T1), 1 h (T2), and 24 h after the race (T3), and were presented as a percentage abundance of HSA and non-albumin fractions (γ , β_2 , α_1 , and α_2) obtained through the densitometric analysis of gels after the separation of serum proteins via native electrophoresis. Before the first race, our recreational runners had decreased percentages of α_1 - and α_2 -globulins and increased percentages of γ -globulins compared to the literature values for healthy subjects. At time points T2 and T3, after simulation of the half-marathon races, the significant increase ($p < 0.05$) in γ fraction percentages was noticed after the placebo, but not the acute aronia juice treatment. According to the obtained results, long-term physical activity in recreational runners induces changes in serum protein profiles, probably due to the protein loss of low-weight proteins after exercise. At the same time, this study has shown that the acute consumption of aronia juice before intensive physical activity could exert a beneficial effect on post-exercise proteinuria.

Keywords: polyphenols; antioxidants; sports nutrition



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