عنوان مقاله:

Protective Effect of Aerobic Training with Blue-Algae spirulina Supplementation on Endothelial Dysfunction and Insulin Resistance in Overweight Adults Men

محل انتشار:

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خلاصه مقاله:

Background and Objective: Aging is the major risk factor for the development of cardiovascular diseases as aging increases plasma levels of pro-inflammatory mediators and endothelial dysfunction. Physical exercise and spirulina improve the endothelial dysfunction and chronic inflammation that accompanies aging. This study aimed to evaluate the effects of Aerobic Exercise (AT), with blue-algae Spirulina Supplementation (SP) on the indicators of endothelial dysfunction and insulin resistance in overweight adult men. Material and Methods: In this clinical trial study, ۴۰ overweight adult men (age ۵۷.۵۰±۴.۸۴ years, Body mass index: BMI ۲۶.۹۰±۲.۸۵ kg/m۲) were selected from Bandar-e-Anzali and randomly allocated into five groups; including Control-Normal (CN), Overweight (OW), Overweight-Aerobic Training (OWAT), Overweight-Spirulina (OWSP) and Overweight-Aerobic Training -Spirulina (OWATSP). Training groups participated in an aerobic exercise program for eight weeks, five sessions per week (with an intensity of ۶۵ to ۸۵% of peak heart rate, ۴۰ minutes). The OWSP and OWATSP groups were provided with two ۵۰۰ mg SP tablets daily in the morning and evening. Data were analyzed using an independent t-test and ANCOVA at a significance level of P <۰.۰۵. Results: The levels of endothelin-۱(ET-۱), Intercellular Adhesion Molecule ۱ (ICAM-۱), Selectin-E, and HOMA-IR index in the OW group were higher than CN (P≤۰.۰۵). AT and SP significantly reduced ET-۱, ICAM-۱, Selectin-E, and HOMA-IR (P≤۰.۰۵). In the OWATSP group, the levels of ET-۱, ICAM-۱, Selectin-E, and HOMA-IR were significantly lower than OW and OWSP (P≤۰.۰۵). NO levels significantly decreased in OWATSP and OWAT (P≤۰.۰۵). Conclusion: Aerobic training and spirulina supplementation could improve the endothelial function in overweight adult men, by altering the levels of ET-۱, ICAM-۱, Selectin-E, and NO. However, the simultaneous effect of AT with SP on these indices was better. Improved endothelial function was associated with an improvement in insulin resistance index.

کلمات کلیدی:

Exercise, Spirulina, Insulin resistance, Obesity, Vascular Injuries