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Effect of Endurance Training on Serum Chemerin Levels and Lipid Profile of Plasma in Obese Women

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Abstract : Aim: Chemerin is a novel adipokine that play an important role in regulating lipid metabolism and abiogenesis. Chemerin is dependent on autocrine and paracrine signals for the differentiation and maturation of fat cells; it also regulates glucose uptake in fat cells and stimulates lipolysis. It has been reported that in adipocytes, chemerin enhances the insulin-stimulated glucose and causes the phosphorylation of tyrosine in Insulin receptor substrate. According to the studies, Chemerin may increase insulin sensitivity in adipose tissue and is largely associated with Body mass index, triglycerides, and blood pressure in those with normal glucose tolerance. There is limited information available regarding the effect of exercise training on serum chemerin concentrations. The purpose of this study was to investigate the effect of endurance training on serum chemerin levels and lipids of plasma in overweight women. Methodology: This study was a quasi-experimental research with a pre-post test design. After required examination and verification of high pressure by the physician, 22 obese subjects (age: 35.64±5.55 yr, weight: 75.62±9.30 kg, body mass index: 32.4±1.6 kg/m2) were randomly assigned to aerobic training (n= 12) and control (n= 12) groups. Participants completed a questionnaire indicating the lack of sports history during the past six months, the lack of anti-hypertension drugs use, hormone therapy, cardiovascular problems, and complete stoppage of menstrual cycle. Aerobic training was performed 3 times weekly for 8 weeks. Resting levels of chemerin plasma, metabolic parameters were measured prior to and after the intervention. The control group did not participate in any training program. In this study, ethical considerations included the complete description of the objectives to the study participants, ensuring the confidentiality of their information. Kolmogorov-Smirnov and Levin test were used for determining the normal distribution of data and homogeneity of variances, respectively. Analyze of variance with repeated measure were used to investigate the changes in the intra-group and the differences in inter-group of variables. Statistical operations were performed using SPSS 16 and the significance level of the tests was considered at $P < 0.05$. Results: After an 8 week aerobic training, levels of chemerin plasma were significantly decreased in aerobic trained group when compared with their control groups ($p < 0.05$).Concurrently, levels of HDL-c were significantly decreased ($p < 0.05$) whereas, levels of cholesterol, TG and LDL-c, showed no significant changes ($p > 0.05$). No significant correlations between chemerin levels and weight loss were observed in subjects with overweight women. Conclusion: The present study demonstrated, 8 weeks aerobic training, reduced serum chemerin concentrations in overweight women. Whereas, aerobic training exercise programmers affected the lipid profile response of obese subjects differently. However further research is warranted in order to unravel the molecular mechanism for the range of responses and the role of serum chemerin.

Keywords : chemerin, aerobic training, lipid profile, obese women
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