The Effect of One Exhaustion Exercise Session on Plasma Leptin in Young Males

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Abstract

Introduction: Leptin is one of the first known adipocytokins. Leptin, a protein with a cytokine-like helical structure and molecular weight of 16 KDa, regulates the body weight and homeostasis of the energy in the body. Physiological stress resulting from physical activity is one of the potential regulators of leptin secretion from adipose tissue. The aim of this study was to investigate the effect of one exhaustion exercise session on plasma leptin in young males.

Methodology: Twenty three male (age 19.58 ± 2.12 yr, BMI 21.63 ± 2.7 kg/m2 and weight 64.86 ± 6.46 kg) performed a session of exhausting session running at 60-85% maximal heart rate. Blood samples were taken before and immediately after exhausting exercise to measure of plasma leptin, insulin, cortisol, lactate and glucose. Data were analyzed using the Statistical Package for Social Sciences (SPSS) ver. 18.0. For statistical analysis, paired-samples t test was used in two stages, before and after exhaustion exercise. Statistical significance was accepted at the 5% level.

Results: results of this study indicated that one progressive running session decreased plasma leptin but this decrease was not significant (P=0/42). Also there was a significant decrease in plasma insulin (P=0/009) and glucose (P=0/03) but no significant decrease was observed in cortisol levels. But significant increase was observed in lactate concentration (P=0/0001).

Discussion and Conclusion: One of the reasons of observing no significant changes in leptin concentration could be low energy costs due to short-term exercise. According to the findings of this study and other similar research in this area exercise longer than 60 minutes with energy expenditure higher than 800 kcal can be recommended for the reduction of leptin concentration in non-athletes.

Key Words: Exhaustion exercise, Leptin, insulin, Cortisol, Young males