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PLASMA AND URINE LEVELS OF IRISIN IN RESPONSE TO MODERATE INTENSITY CONTINUOUS AND TO HIGH INTENSITY INTERMITTENT ACUTE EXERCISES

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KEYWORDS: Irisin, Exercise, Iso-work, Intensity

INTRODUCTION

Recently skeletal muscle has been identified as an endocrine organ due to its capacity to produce and release hormones, named “myokines”, in response to contraction¹. Irisin, one of these myokines, has been recognized for important actions in other sites, including the adipose tissue by increasing the fat metabolism in response to physical exercise². However, there is no data comparing the acute effect of different intensity iso-work exercise protocols in plasma and urinary levels of irisin. Therefore, we assessed plasma and urine levels of irisin before and after high and moderate intensity iso-work protocols of physical exercise.

METHODS

Thirteen young healthy physically active men were recruited to four supervised training sessions. Two evaluation sessions were performed to measure body composition, physical activity, aerobic and anaerobic capacities before High Intensity Interval Exercise (HIIE) and Moderated Intensity Continuous Exercise (MICE) iso work exercise sessions on a cycle

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ergometer. The HIIE protocol included a 5-minute warm-up at 60-70% of heart rate peak (HRp) intensity followed by 10 sets of 30 seconds above 90% with 1 minute of recovery and 3 minutes of cool down (both at the same warm-up power). MICE protocol was performed at a constant power corresponding to 60-70% of HRp and finalized at the same total work of HIIE. Blood and urine samples were collected before and after the protocols, then stored at -80°C for further analysis of irisin concentrations by enzyme-linked immunoassay (ELISA).

RESULTS

We did not find any difference in the comparison of baseline levels (before both exercise protocols) of all cytokines in plasma and urine. In addition, no differences were detected in the comparison of urine and plasma levels of these molecules just after both exercise protocols. On the other hand, the ratio between levels of irisin after exercise session and baseline levels inversely correlated with the peak of maximum volume of oxygen (VO₂) only in HIIE ($r=-0.675$, $p=0.032$).

CONCLUSION

Our study suggests that a better aerobic capacity may impair the release of irisin immediately after exercise, probably due to physiological adaptation. Furthermore, this study did not detect acute release of irisin after both exercise protocols. Maybe repeated measurements of irisin at different time-points following each exercise protocol may be necessary to show the release of this molecule, as reported by Tsuchiya et al³.

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