

Original Paper

# Comparison the effect of eight weeks aerobic training with moderate and high intensities on serum levels of Irisin and Uncoupling Protein 1 (UCP-1) in white adipose tissue in obese male rats

Keyvan Hejazi (M.Sc)<sup>1</sup>, Seyyed Reza Attarzadeh Hosseini (Ph.D)<sup>\*2</sup>  
Mehrdad Fathi (Ph.D)<sup>3</sup>, Mohammad Mosaferi Ziaaldini (Ph.D)<sup>4</sup>, Mahdieh Zaeemi (Ph.D)<sup>5</sup>

<sup>1</sup>Ph.D Candidate in Sport Physiology, Faculty of Sport Sciences, Ferdowsi University of Mashhad, Mashhad, Iran.

<sup>2</sup>Professor in Sport Physiology, Faculty of Sports Sciences, Ferdowsi University of Mashhad, Mashhad, Iran.

<sup>3</sup>Associate Professor in Sport Physiology, Faculty of Sports Sciences, Ferdowsi University of Mashhad, Mashhad, Iran.

<sup>4</sup>Assistant Professor in Sport Physiology, Faculty of Sports Sciences, Ferdowsi University of Mashhad, Mashhad, Iran. <sup>5</sup>Assistant Professor, Department of Clinical Sciences, Faculty of Veterinary Medicine, Ferdowsi University of Mashhad, Mashhad, Iran.

---

## Abstract

**Background and Objective:** The synthesis of uncoupling protein 1 (UCP1) in adipose tissue plays an important role in providing resistance and prevention of fat accumulation, weight gain and obesity. This study was done to evaluate the effect of eight weeks aerobic training with moderate and high intensities on serum levels of Irisin and UCP1 white adipose tissue in obese male rats.

**Methods:** In this experimental study, 24 adult obese male Wistar rats (weight: 250 to 300 gr, BMI>30g/cm<sup>2</sup>) were randomly assigned into three groups including moderate aerobic training intensity, high intensity aerobic training and control group. The aerobic exercise training was included 8 weeks (5 sessions/per-week for 60 min per session). All training groups carried out aerobic training with 28 m/min (moderate intensity), aerobic training with 34 m/min (high intensity) on treadmill. 48 hours after the training period, the level of UCP1 and Irisin protein was measured.

**Results:** The level of UCP-1 in adipose tissue and serum Irisin in both aerobic training intensities increased compared to control group, but this increase only in aerobic training group with a moderate intensity was significant ( $p<0.05$ ).

**Conclusion:** Eight weeks aerobic training with moderate intensity leads to increase of UCP-1 in adipose tissue and Irisin levels.

**Keywords:** Aerobic training, Irisin, Uncoupling protein 1, White adipose tissue

---

\* Corresponding Author: Attarzadeh Hosseini SR (Ph.D), E-mail: attarzadeh@um.ac.ir

Received 19 Aug 2017

Revised 1 Jan 2018

Accepted 1 Jan 2018

Cite this article as: Hejazi K, Attarzadeh Hosseini SR, Fathi M, Mosaferi Ziaaldini M, Zaeemi M. [Comparison the effect of eight weeks aerobic training with moderate and high intensities on serum levels of Irisin and Uncoupling Protein 1 (UCP-1) in white adipose tissue in obese male rats]. J Gorgan Univ Med Sci. 2018 Autumn; 20 (3): 31-39. [Article in Persian]

Orcid id: Keyvan Hejazi: 0000-0002-4590-8018, Seyyed Reza Attarzadeh Hosseini: 0000-0002-9059-3262, Mehrdad Fathi: 0000-0002-8655-8472, Mohammad Mosaferi Ziaaldini: 0000-0001-7193-663X, Mahdieh Zaeemi: 0000-0002-4226-8393