The Relationship between Plasma Antioxidant Enzymes Activity and Sex Hormones during the Menstrual Cycle

Abstract

Background and objective: There is increasing evidence for the role of oxidative stress in female reproductive tract. The purpose of this study was to determine the activity of antioxidant enzymes during menstrual cycle. In addition, the relationship between activity of antioxidant enzyme and sex hormones was evaluated.

Materials and methods: In this study the activity of superoxide dismutase, glutathione peroxidase, glutathione reductase, catalase and total antioxidant capacity during the menses, follicular and luteal phases of the menstrual cycle in twenty women with regular menstrual cycle were studied. Furthermore, the correlation between activity of antioxidant enzymes and estradiol, progesterone, LH, FSH and testosterone were evaluated.

Results: There was no significant difference between activity of superoxide dismutase, glutathione peroxidase, glutathione reductase, catalase and total antioxidant capacity during the menses, follicular and luteal phases of the menstrual cycle (P>0.05). We found significant correlation, in luteal phase, between superoxide dismutase and FSH (P<0.05, r=0.44) and LH (P<0.05, r=0.54). Also it is observed between LH and glutathione peroxidase (P<0.05, r=0.44).

Conclusion: Based on the results, there is no significant difference between antioxidant enzymes and total antioxidant capacity of plasma during menstrual cycle. In other words, physiologic system of women with regular menstrual cycle can protect body against oxidative stress and this is probably performed due to action of FSH and LH hormones.

Keywords: Antioxidants; Menstrual cycle; Sex hormones

Tavilani, H. (PhD)
Associated Professor of Biochemistry, Urology & Nephrology Research Center, Hamadan University of Medical Sciences, Hamadan, Iran

Setarehbadi, R. (MSc)
PhD Student of Biochemistry, Student Research Committee, Hamadan University of Medical Sciences, Hamadan Iran

Fattahi, A. (MSc)
PhD Student of Biochemistry, Student Research Committee, Hamadan University of Medical Sciences, Hamadan Iran

Nasrollahi, SH. (MD)
Assistant Professor of Gynecology, Department of Gynecology, Hamadan University of Medical Sciences, Hamadan, Iran

Karimi, J. (PhD)
Assistant Professor of Biochemistry, Department of Biochemistry, Hamadan University of Medical Sciences, Hamadan, Iran

Shafiee, G. (MSc)
PhD Student of Biochemistry, Student Research Committee, Hamadan University of Medical Sciences, Hamadan Iran

Hosseinipanah, SM. (Ph.D)
Assistant Professor of Anatomy, Department of Anatomy, Hamadan University of Medical Sciences, Hamadan Iran

Corresponding Author:
Hosseinipanah, SM
Email: hosseinipanah@hotmail.com

Received: 28 Nov 2012
Revised: 21 Dec 2012
Accepted: 22 Dec 2012

This paper should be cited as: Tavilani H, Setarehbadi R, Fattahi A, Shafiee G, Hosseinipanah SM. [The Relationship between Plasma Antioxidant Enzymes Activity and Sex Hormones during the Menstrual Cycle]. MLJ. 2013; 7(4):34-40 [Article in Persian]