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Effect of cinnamon extract on male reproductive physiology in mice

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ABSTRACT

Cinnamomum Zeylanicum has many therapeutic effects for example the increasing of sexual ability. In this investigation the effect of cinnamon extract in concentrations 10 and 20 mg/kg b.w. have been worked out on male reproductive physiology in mice. After injection hormonal changes (LH , FSH and testosterone) were investigated. The results showed singnificant increase ($P< 0.05$) in the concentration of LH, FSH and testosterone hormones. It is concluded that cinnamon extract is useful on male reproductive system.

Key words: Cinnamon, LH, FSH, testosterone, mice

Introduction

Cinnamon plant has many therapeutic effects. One of these important effects is increasing of sexual ability. Cinnamon can be due to the treatment of diabetes [1,4, 17], reduced cholesterol and low density lipoprotein (LDL) [7], property of bactericide [10], improving nausea and diarrhea [18] , reduction of the release of free radicals in the body [2] and increasing of sexual desire [15,19].

Cinnamon has been considered for study of sexual power and fertility rates since long. On the other hand, little research on the effect of this substance has been done on the male reproductive physiology. Spermatogenesis process is done within cells of testis tubules which produce sperm. Sperm during fertilization combined with ovum and formed the zygote. Thus, the aim of this study is the investigation of effect of cinnamon extract on male reproductive physiology.

Materials and methods

The animals used in this study are male adult mice (weighing about 30-34gr and 9-10 weeks old), purchased from research institute of vaccination in shiraz. There are 10 mice in each group (control, sham , treatment I and treatment II groups). During testing, temperature was set between 20 to 24^{oc}. Photoperiod - the darkness were regulated for animals to 12 hours darkness and 12 hours light. During testing, animals were fed by pellet and drinking water. The animals were kept out two weeks for adaptation in animal house in Jahrom azad university. After preparation of cinnamon extract, it was used for injection. For preparating of cinnamon extract values of 10 and 20 g cinnamon was weighed on analytical precision scale, and 100 ml of distilled water was resolved. The gentle heat for 30 minutes (about 45 degrees) were to be extracted out. Then the solution was clear with filter paper and was ready for injection. The control animals received drinking water. The Sham group received distilled water. The treatment animals received cinnamon extract in concentrations of 10 and 20 (mg/kg B.W.) for two weeks, each day amount 1 ml inter peritoneum.

After injection the animals were sacrificed. The concentration of FSH , LH and testosterone hormones were measured with ELISA method. The concentration of LH , FSH and Testosterone hormones in sample blood was measured by special LH and FSH hormones kits were provided from Iran Teb Pishtaz Company using ELISA method. Obtained results were investigated by SPSS statistical software,T-test and ANOVA in P-value (<0.05).

Results:

The concentrations of FSH, LH and testosterone hormones was observed (fig.1, 2 and 3).

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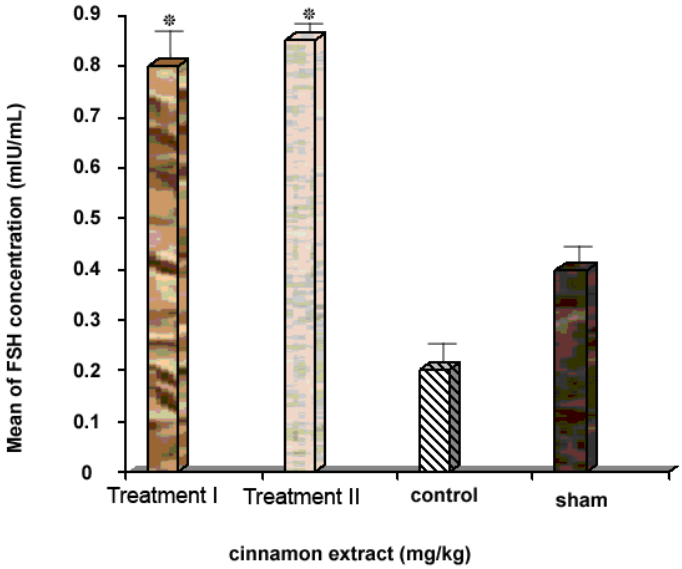

Fig. 1: Effect of cinnamon extract on FSH concentration in control, sham and treatment groups.

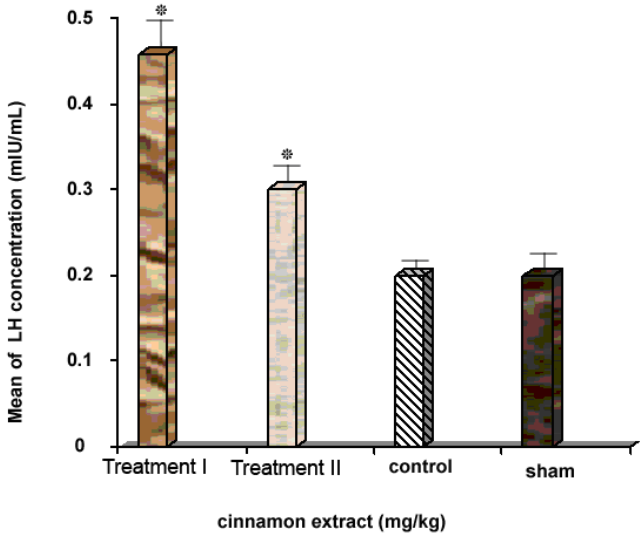

Fig. 2: Effect of cinnamon extract on LH concentration in control, sham and treatment groups.

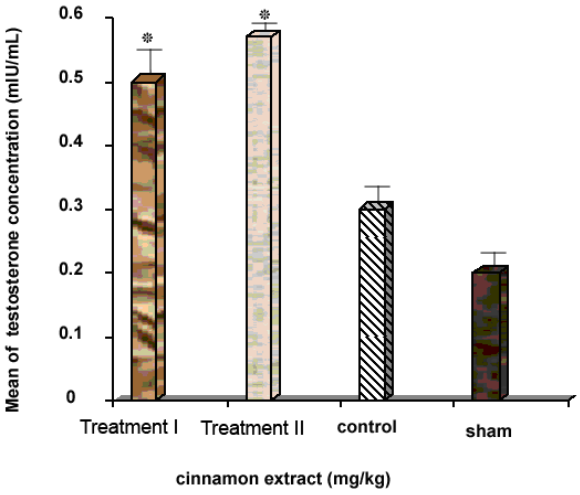

Fig. 3: Effect of cinnamon extract on testosterone concentration in control, sham and treatment groups.

Discussion and Conclusion:

Cinnamomum zeylanicum as a medicinal plant, belongs to Luaraceae family. This plant has many therapeutic effects. One of important effects is increasing of sexual ability. The most important components in cinnamon are cinnamomin and cinnamaldehyde[15].

These compounds effect on the hypothalamus-pituitary axis and was increased concentration of LH, FSH and testosterone hormones. Parivzi and Ellendorff showed that cinnamaldehyde extracted of cinnamon increase norepinephrine and this hormone can increase the release of nitric oxide. Cinnamaldehyde release cAMP with connecting calcium in cell memberane and occurs increasing of norepinephrine secretion (3). Norepinephrine increase LH secretion with activation of nitric oxide. Nitric oxide affects hypothalamus axis and release gonadotropin hormone (GnRH). Gonadotorpin hormones increase secretion of LH and FSH hormones. LH hormone affects Leydig cells and this cells release testosterone hormone. Testosterone is the most important hormones in sex cells proliferation [12, 14].

Therefore, increased concentration of hormones LH, FSH and testosterone in serum in the treatment groups appears to increase GnRH [11].

Also, Kosior and Bobowiec proposed that leptin hormone increase FSH secretion with intermediating of nitric oxide synthesis [8].

Leptin hormone stimulate increasing of androgenic hormones secretion such as testosterone and this hormone proliferate sex cells [20].

Studies also indicate that delta-cadenin compound extracted of cinnamon can increase the concentration of testosterone [12 , 14].

Researchers have shown that Leydig cells release in addition to the production of testosterone, hormones and other factors such as oxytocin, B-endorphins, prostaglandins, and another steroids. Leydig cells release testosterone. Also reports say that Leydig cells target cells of various factors including vasopersin and interleukin [5,6,9,13].

Reports indicate that spermatogenesis depends on cells to cells interactions such as Sertoli cells and Leydig cells interactions [16].

So, it can conclude that cinnamon is useful on male reproductive system in mice.

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