The effects of hydroalcoholic extract of *Nigella Sativa* on pituitary-gonadal Axis in female rats

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ABSTRACT

**Background:** Bleak seeds with scientific name, *Nigella Sativa*, belong to ranunculaceae family and had been used for prediction and treatment of lot of diseases including menstrual disorders and sexual dysfunction is consumed. **Materials and Methods:** In this research, 35 adult female Wister rats weighing approximately 250±50gr were divided in 5 groups with 7 members as follow: Control group (without treatment), sham (take alcohol by interaperitoneal injection) and 3 experimental groups were injected interaperitoneal respectively (100, 200 and 400) mg/kg/b.wt hydroalcoholic extract of Black Seed that was prepared by Maceration method. After treatment period (21 days), blood samples were taken from all groups. Its serum were separated for biochemical study by Elisa method. Using statistical software, SPSS 18, data were analyzed by One Way ANOVA and Duncan test at the significant level of 0.01 and 0.05. **Results:** Finding showed significant reduction in the serumic level of LH, FSH and estrogen in all treatment groups. Progesterone level increased significantly in minimum dose and decreased in maximum dose (P<0.05). **Conclusion:** Hydro-alcoholic extract of black bean can cause changes in sex hormones in female rats. So should be used with caution in female.

Key words: *Nigella Sativa*, sex hormones, Rat.

Introduction

Herbs have long been used by humans [10]. Black seed is a plant of the family buttercups [11]. Plant with white or pale blue flowers or blue full color that is known for its numerous therapeutic effects [4]. Black seed beads in traditional medicine in many countries for the prevention and treatment of many diseases and disorders can be including cough, nasal congestion, headache, toothache, intestinal worm treatment, menstrual disorders, digestive disorders and impotence [1]. Timokinon, January Timokinon, Timokinon hydrocarbons and aqueous extracts of *Nigella thymol* are the main ingredients. 30% of the weight of black seed oil to form, material, bulk oil contains linoleic acid (6/55%), and oleic (4/23%) and palmitic (5/12 percent) are also components of the essential oil of black cumin include: trans - anethole (3/38%) of Paralympians - Seaman (8/14 percent), limonene (3/4 per cent) and Charon (4 percent) [7]. The seed of this plant also has a fat, vitamins, minerals, and proteins (including the eight essential amino acids) and carbohydrates include mono-saccharides in the form of glucose, arabinose and rhamnose is [4]. Extensive studies on the use of black seed reduced, complications in the treatment of some diseases, including cardio - vascular and heart rate Elevated levels of blood platelets [1] and reduced glucose concentrations in diabetic rabbits was performed. Black beans can also produce antioxidants have anti-tumor activity [8] Timokinon matter effectively and black beans destroys cancer cells [2]. Reports of sexual organs of black beans in a significant increase in weight and spermatogenesis [6,3]. But the effect of this substance on Ovouzhetz considerable research has been done. Therefore, the effect of black seed based on hormones of the pituitary - gonadal axis in this study, the potential effect on female Ovouzhetz examined.

Materials and Methods

In this study, 35 adult female Wistar rats weighing approximately 300-250 g Choice, after 2 weeks at standard conditions (2 ± 2 °C and 12 h light and 12 h dark cycle) and cycle them (vaginal smear) were divided into 5 groups. The first seeds of black grains per 10 g of sample powder Sox let method; 200 ml of solvent (water and ethanol) extracts were prepared with the Rota vapor. After preparing the concentration minimum, average and
maximum of 21 consecutive days during the extraction procedure with a syringe was injected intraperitoneally into mice. After the treatment period, samples were dissected and taking blood from the heart. Isolated for measurement of serum hormones (estrogen, progesterone, LH, FSH) using specific ELISA kits were used. Data using ANOVA and Duncan's test at a confidence level of more than 95% were analyzed.

Results:

Finding showed significant reduction in the serumic level of LH, FSH and estrogen in treatment groups with Black seeds extract in compared to control and sham groups (P<0.05). Serumic level of progesterone increased significantly in treatment group with medium dose and decreased in treatment group with maximum dose.

The results show that serum levels of LH and FSH in the experimental groups with medium and maximum dose of estrogen therapy in all groups decreased significantly (P <0.05) than the control group and progesterone in the experimental group increased minimum dose and maximum dose group showed a significant decrease compared to controls.

Fig. 1: FSH level in experimental groups.

Fig. 2: LH level in experimental groups.

Fig. 3: Estrogen level in experimental groups.
Discussion:

One of the compounds found in *Nigella Sativa* is conjugated linoleic acid [7] that, according to previous research, can reduce LH and FSH hormones [5]. It has been proven that neurons which secrete nitric oxide, have a direct effect on GNRH and LPTN release. LPTN also increases nitric oxide in the hypothalamus and reduce pituitary hormones (LH and FSH). Reduction of LH and FSH hormones in this study due to the inhibitory effect of Linoleic acid on nitric oxide prouduction [5].

Probably some toxic substances found in black seed as Parasmyn and saponins are destroyed corpora Lateum receptor and reduce progesterone [9]. As expected, reduction of LH cause releasing progesterone so releasing of progesterone hormone in treatment group with minimum dose of black seed extract in this research, can be affected of negative feedback of progesterone on the pituitary and secretion of LH. Medium dose didn't change in treatment group but probably reduction of progesterone in treatment group with maximum dose due to destruction of corpora Lateum receptor. Although experimental error, inappropriate dose of extract even physiological conditions of samples should be considered.

On the other hand, toxic compounds of black seed such as saponins and parasmyn, can destroy tissue and ovarian follicles due to loss of estrogen [12]. Also reduction of FSH hormone cause reduction of estrogen.

Conclusion:

The purpose of the current study was to determine, hydro alcoholic extract of Black seed reduced LH, FSH and sex hormon in female. Our findings suggest that this herb should be used with caution in pregnant.

Acknowledgment

We are hereby appreciated everyone who helped us in this study.

References
