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Effect of Onions Extracts on Sex Hormones in Wistar Rat.

Olaleye Wasiu Babatunde[1], Nnodim Johnkennedy[2*], and Kanu Stella Ngozika[2]

[1]9999 Smitherman Drive, 71115, Shreveport LA USA.

[2]Department of Medical Laboratory Science Imo State University Owerri.

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*Corresponding author: Nnodim Johnkennedy, Department of Medical Laboratory Science Imo State University Owerri.

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Abstract:

The purpose of this study was to investigate the possible impact of onion extract on the wistar rat's sex hormone. Two sets of six adult male rats, each weighing between 100 and 120 grams, were created from the twelve total. As a healthy control group, Group A was used. Group B received an onion extract dose of 1.0 milliliters per kilogram of body weight for a duration of 28 days. The findings demonstrated that, in comparison to the control group, the administration of onion extract significantly increased the serum levels of follicle stimulating hormone (FSH), estradiol, testosterone, luteinizing hormone (LH), and prolactin ($P<0.05$). This observation suggests that the use of onion extract in reproductive treatments may be advantageous.

Key Words: onions; sex hormone; fertility.

Introduction:

Onions, or Allium cepa, are a type of vegetable with distinct, strong flavors and a few therapeutic uses. It differs in terms of flavor, color, size, and shape. Onions come in three main varieties: red, yellow, and white. Depending on the season, their flavor can vary from being harsh, spicy, and aromatic to being juicy and sweet [1]. Watery eyes occur when fresh onions are consumed. When cutting or chopping onions, there's a saying that makes people cry. One possible cause of this reaction could be a gas called syn-Propanethial-S-oxide. This substance is a liquid compound that generates tears or eye stings when it works as a lachrymatory agent [2]. Onions may also reduce the risk of certain malignancies, arterosclerosis, and skin conditions, among other health benefits.

One nutrient-rich food is onions. This suggests that they have little calories but are high in vitamins, minerals, antioxidants, and organosulfurs. This could assist in combating free radical molecules [3].

Sex hormones are thought to be important regulators of puberty-related sex-related traits in both males and females. Additionally, they are essential in controlling skeletal growth when skeletal mass is rising or falling. They affect a wide range of normal and pathological neurological and immunological functions in addition to endocrine and musculoskeletal functions. Gonadal steroids, gonadocorticoids, and sex steroids are other names for sex hormones. These hormones have a steroid basis and interact with the steroid hormone receptors in vertebrates [4].

The primary functions of sex hormones are to promote sexual differentiation and reproduction. Three kinds of sex steroids are produced by the ovaries in females. Progestins, androgens, and estrogens are a few of these [5].

Slow rate genomic mechanisms operating through nuclear receptors and non-genomic mechanisms

acting through membrane-associated receptors mediate the effects of these three sack hormones, eliciting several signaling cascades in a rapid response [6].

Although they can cause sex-regulated reactions and are linked to the sex hormones, the polypeptide hormones luteinizing hormone, follicle-stimulating hormone, and gonadotrophin-releasing hormone are not thought of as sex hormones in and of themselves [7]. The purpose of the current investigation was to ascertain the onion extracts' efficaciousness in terms of sex hormone assessment criteria.

Materials and Methods:

Material:

The onions was bought from an Orie market in UmuAmusa Njaba LGA Imo State, Nigeria between 15th and 20th August, 2023. The leaves were identified and authenticated by Botanist Imo State University Owerri, Nigeria.

Preparation of *Allium cepa:*

The onions were washed thoroughly to remove dust and sand particles. It was then pounded. Then it was filtered using 1mm sieve and the liquid collected

Experiment animals:

Twelve apparently healthy adult male wistar rats weighing between 100g to 120 were used for the study. They were kept in a clean plastic cage and housed in the experimental animal house of Imo State University. The wistar rats were acclimatized for a period of 14days, during which they were fed properly with commercially prepared growers mash made by Grand Cereals Ltd and distilled water was provided *ad libitum*. The study was approved by the institutional Ethical Committee.

Experimental design:

The animals were randomly assigned into two groups of six rats each. Each group was treated either with distilled wistar only or with single dose of variable doses of *onion extracts.* These are classified as follows; Group A is the control that was only administered with the rat diet. Group B were administered with extract of onions with a dose concentration of 1.0ml/kg body weight for 28 days.

Blood collection:

After treatment with onion extract for 28 days all the animals (Group A and B) were weighed and anaesthetized in a glass jar containing cotton wool soaked in chloroform. Blood samples were collected by Cardiac Puncture using sterile needle and syringe. The blood samples were put into EDTA containers properly labelled for analysis within 24hours of collection.

Sex Hormone Assay:

Serum analysis of hormone:

Serum level of follicle stimulating hormone (FSH), estradiol testosterone, luteinizing hormone (LH), and prolactin was estimated using enzyme immunosorbent assay through kits

Statistical Analysis:

All results were expressed as mean ±standard deviation. The data was analyzed using one-way analysis of variance (ANOVA) followed by student's t-test. $P < 0.05$ was considered as statistically significant.

Statistical analysis:

The results were expressed as mean ± standard deviation. The statistical evaluation of data was performed by using students t- test.

Treatment	FSH (mg/dl)	LH (mg/dl)	Testosterone (mg/dl)	Prolactin (mg/dl)	Estradiol (mg/dl)
Control	16.9±0.32	30.4±4.28	51.7±6.93	20.6±9.00	34.9±7.45
1ml/kg Onions	19.5±2.4*	35.7±9.05*	55.4±7.70*	24.07±8.05*	42.03±9.23*

Table 1: *Effect of Onions on serum follicle stimulating hormone (FSH), luteinizing hormone (LH), testosterone, estradiol and prolactin in rat.*

*Significantly different from control at P<0.05

Discussion:

Onions' impact on wistar rats' sex hormones was assessed. One plant with therapeutic qualities is onions [8].

In the recent past, research on herbal medicine has reached an amazing global level. The reputation of traditional herbal treatment in Africa, and particularly in Nigeria, has been greatly enhanced by the use of some plant elements in pharmaceutical enterprises. It is impossible to overstate the importance of male fertility [9].

In this study, the findings demonstrated that, in comparison to the control group, male rats given onion extracts had significantly higher levels of serum testosterone, luteinizing hormone (LH), follicle stimulating hormone (FSH), estradiol, and prolactin. This suggests that onions are a major factor in infertility problems. [10].

While LH induces the generation of testosterone in Leydig cells, which may then act on the Sertoli cells and peritubular cells of the seminiferous tubules and also drive spermatogenesis, FSH is an important hormone that promotes spermatogenesis [10]. Using onions in combination with improved endocrine function has significantly improved fertility. The pituitary gland's secretions of LH and FSH play a crucial role in male reproduction [11]. This may be linked to an increase in gonadotropin release, which raises LH and FSH levels and increases the amount of testosterone produced by the testis's leyding cell. This aligns with the research conducted by [12, 13].

Studies involving male mice that had elevated plasma testosterone produced similar findings. As a result, elevated levels of these hormones may benefit male fertility enhancement.

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