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Assessing the effects of rhizome extracts from Zingiber Officinale on the hormones FSH and LH in male albino rats

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ABSTRACT

Plants are used to treat many diseases and conditions and used to improve effect. The purpose of this work is to examine how male albino rats' LH and FSH hormones are affected by Zingiber Officinale rhizome extracts. A20 male albino rate was maintained as a folk and given basic chew pellets before being split into two experimental groups at random., the period of treatment was thirty days, as follows first group (G1) The animals were intubated with distilled water only, (control group). The second group (G2) For 30 days, these animals received daily stomach tube treatments of Zingiber officinale rhizome extracts at a concentration of 60 mg/kg B.W. The animal was slaughtered at the conclusion of the treatment period, and blood was drawn to measure several parameters. The Results showed that Zingiber officinal rhizome Extracts could improve all tested parameters (FSH and LH levels), was notably improving ($P \leq 0.05$) related to the group under control. We can concluded Zingiber officinale rhizome Extracts have an improving effect on male reproductive hormones including (LH and FSH levels).

KEYWORDS: Zingiber officinale, MaleAlbino, reproductive, hormones.

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INTRODUCTION

Humanity has utilized medicinal plants for their therapeutic value for thousands of years due to most of plants contain active substance that have therapeutic and enhancement effects. Natural sources have also produced an astounding number of newly developed pharmaceuticals, Roughly 80% of people on the planet get their primary medical treatment from plant-based, herbal medicine systems, and the applications of the agents in these systems served as the foundation for many of these extracts [1]. Also, certain plant extracts boost reproductive hormones, lower the pace at which ovarian cells undergo programmed death, increase antioxidant levels, and limit the generation of free radicals, additionally the therapeutic effect of plant is due to antioxidant activity [2,3] and Dangerous oxidative stress is lessened by natural antioxidants that lead to improving effects [4,5,6]. Herbs with intrinsic active ingredients that are used to cure illness or alleviate pain are known as medicinal herbs [7]. It has been commonly observed that most developing nations employ herbal remedies and medicinal plants for therapeutic purposes to maintain healthy health [8]. *Zingiber officinale* has been utilized since the 4th century BC and is a necessary component of many traditional Chinese remedies, additionally, ginger is utilized as a spice by the Greeks and Romans and as a medicinal herb by Africans and West Indians and used in deferent countries as drug to treating deferent disease condition [9]. The medicinal herb ginger (*Zingiber officinale*) is becoming more and more well-liked among contemporary doctors [10]. The primary bioactive components that may be extracted from ginger are gingerdiol, zingiberene, gingerols, protodioscin, saponine, and Numerous health benefits of ginger include its anti-inflammatory, cholagogue, antithrombotic, anti-emetic, and antioxidant properties [11]. Ginger reduces motion sickness, pregnancy, and post-operative nausea and vomiting [12]. When it comes to reproductive toxins like cyclophosphamide, cisplatin, malathion, and hyperglycemia, ginger provides protection. The purpose of this study was to demonstrate how an extract affected on testicular histopathology findings and LH and FSH hormones.

MATERIALS AND METHODS

Materials

Zingiber officinale extracts :-

The Zingiber officinale (Ginger) was bought from the market, cleaned, and ground by using an electrical blender. The powder was stored at room temperature until extracted. Zingiber officinale alcoholic extract was made using the technique of [13] by using a soxhlet device and giving the animals an oral dosage of the extract (60 mg/kg B.W.) [14,15] by stomach tube daily for

30 days.

Experimental Animals:
Twenty (20) healthy adult male rats utilized in this investigation ranged in age from 8 to 10 weeks and weighed between 150 and 200 grams. acquiring animals from the Baghdad University Animal House, which is situated at the Department of Pharmacology's Animal House at Baghdad University College of Veterinary Medicine. The animals were placed in plastic cages in a controlled environment with 20–25°C temperatures, 12 hours of light each day, and 50–70% moisture for a week to allow them to become adjusted to their new surroundings. Given a regular diet and unlimited access to water. Cages are cleaned twice a week. Rats were divided into 2 groups (10 each rats).

Experimental design:-
Twenty (20) adult male rats who were in good clinical health were used in the experiment. Following a week of acclimation to their cages, the rats were split into two stages, each consisting of ten rats, as follows:
First stage: Oral administration of 0.2 ml distilled water was used as the control (clinically healthy).
Second stage: administered extract (60 mg/kg B.W.) orally every day for a month [14,15].

Taking Samples:-
sample of blood:-
After the first day, blood was drawn from five rats in each group, from the last injection, and placed into sterile centrifuge tubes. To collect serum, The blood samples were centrifuged for 20 minutes at 3000 rpm. Serum samples were stored at -200C until examination.

Techniques:
Hormonal examination of fertility (FSH, LH,):
Hormone levels were measured using the completely anatomized Elcxceyus 2010 equipment from Roche, Germany. Chemilumencine has a detection limit in Nanomole levels, according to the analysis principle. The curve for machine reading universal normal is created using little and large range calibrators, and high test controls are employed to regulate the quality of the data.

Analytical Statistics:
With the use of statistical software, data are examined statistically (SPSS, version 18, USA [16]. Estimates are made for all variables' means and standard errors. Duncan [17] multiple comparison tests were used in conjunction with an ANOVA one-way to complete changes between group means. In the same column, distinct superscript letters denote significance ($P \leq 0.05$) [18].

RESULTS AND DISSCUSSION:

Results
Level of LH in serum:-
LH level shown a significant improved ($P \leq 0.05$) on Zingiber officinale group (0.252 ± 0.04) comparing with standard group (0.21 ± 0.02). (Table 1)

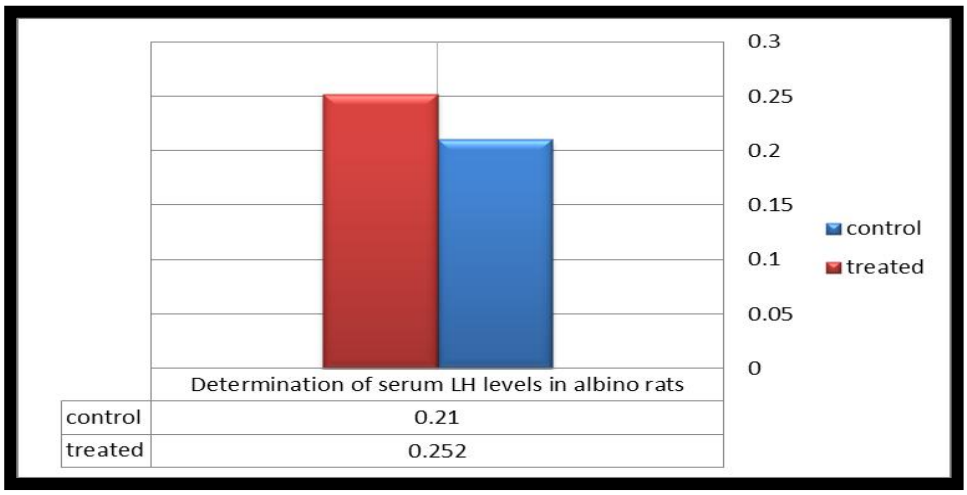
Level of FSH in serum:-
FSH level revealed a significant improved ($P \leq 0.05$) in Zingiber officinale collective (0.66 ± 0.05) comparing with standard collective (0.25 ± 0.03). (Table 2)

Table (1): Level of LH in serum of albino rats. (Mean ± SE) (n=10).

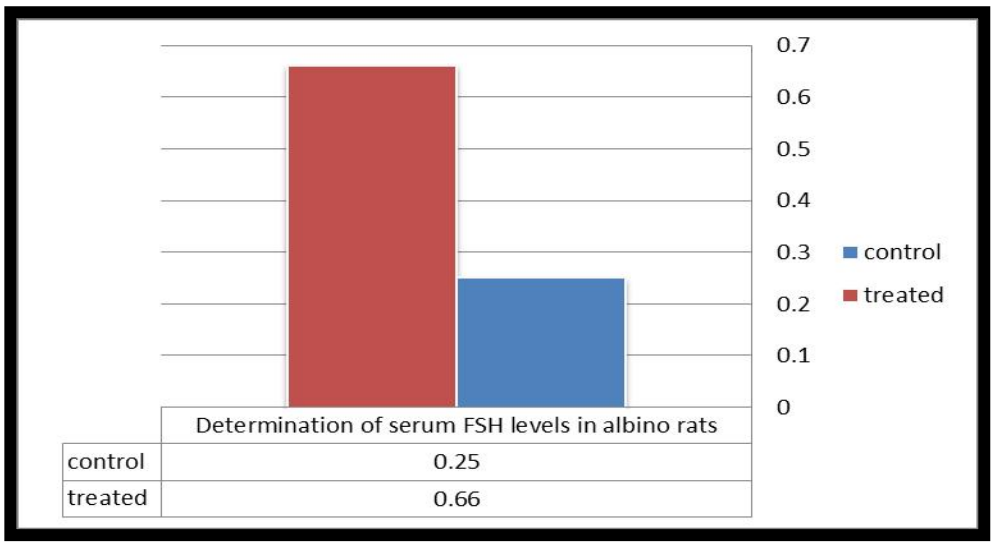
No.	parameters / Group	LH (nmol)
1-	Control	0.21 ± 0.02^{b}
5-	*Zingiber officinale*	0.252 ± 0.04^{a}

Table (2): Level of LH in serum of albino rats. (Mean ± SE) (n=10).

No.	**parameters / Group**	**FSH (nmol)**
1-	Control	0.25 ± 0.03^{b}
4-	*Zingiber officinale*	0.66 ± 0.05^{a}



Figer (1): Concentrations of serum LH in ten albino rats (Mean ± SE): n = 10.



Figer (2): Concentrations of serum FSH in ten albino rats (Mean ± SE): n = 10.

Discussion

Hormonal effects of Zingiber officinale extracts:-

The data finding in the present study were a notably improved (P≤0.05) in androgenic activity (LH and FSH levels) of the Zingiber officinale tested group in male rats, It was discovered that this efficiency has improved in terms of the growth of the seminal vesicle's fructose sugar and the epididymis enzyme alpha-glycosidase, as well as two activities to enhance cloned androgen, which was caused by an apparent increase in testicular cholesterol, which is the precursol in the synthesis of vital androgen [19]. The liver is essential for controlling hormone production, metabolism, and breakdown [20], As well as showing notable increases in the concentration and movement of sperm in male rats [21]. On the other hand, the plant ginger by the Chinese is effective in the case of decreasing sexual desire in women, and also for the treatment of enough menstrual and the late menstrual period [22]. Because of its antioxidant qualities, ginger rhizome is used as a spice all over the world [23] as well as androgenic activities [19], phytochemicals Zingiber officinale were documented in an animal model; An increase in the testicular weight and blood testosterone level indicates this activity. Antioxidant activity is exhibited by all of the main active components of Zingiber officinale, including gingerol, ginsengridiol, gingerone, and shogaols [24]. According to reports of research on animals in Saudi Arabia, ginger notably increases sperm motility and count [25]. [26] investigate the mechanisms underlying the preventive benefits of Zingiber officinale and Hibiscus sabdariffa (Roselle) against cisplatin-induced reproductive damage in rats, including decreased sperm abnormalities and increased sperm motility.

Traditional medicine uses Zingiber officinale's protodioscin and saponins to cure sexual dysfunctions by increasing libido, testosterone, and luteinizing hormone [27]. Tribestan, a proprietary Zingiber officinale extract, enhances libido and treats menopausal symptoms [28]. Additionally, Zingiber officinale raises testosterone, pregnenolone, and oestrogen levels in males, increasing their sexual potency [29]. [30], found that utilizing Zingiber officinale extract significantly raised the levels of testosterone, legalizing, and follicle-stimulating hormones in men's serum at p≤ 0.01 for all hormones.

CONCLUSION

Zingiber Officinale rhizome Extracts have improving effect in male reproductive hormones including (LH and FSH levels).

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