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Effects of *Tribulus terrestris* (Zygophyllaceae) extracts on reproductive system of winster rats: *Ratus norvegicus*

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Abstract
The present study was designed to investigate the effects of extract of *Tribulus terrestris* on fertility of *Ratus norvegicus*. Rats were divided into three groups of 10 rats. (group1: control, group 2 and 3: experimental). Group 2 was given *Tribulus Terrestris* water extract as an oral drinking at a dose of 2 ml daily for 30 days, while group 3 was fed on alcoholic extract mixed with food. (75g / Kg food weight) daily. After 4 week rats were weighed and their gonads were removed, weighed and processed histological. Data collected were assessed using ANOVA single factor. *Tribulus terrestris* extract showed statistically significant increase in body weight $p<0.05$) and testes weight (($p<0.05$). Increase in the weight of testes. No effect was detected in females treated with the both *Tribulus terrestris* extracts. Histological slides of the testes showed a significant increase in seminiferous tubules. And increment in testosterone concentration.

Keywords: Tribulus terrestris Ratus norvegicus. Seminiferous tubules. Testosterone.

1. Introduction
The productive system or genital system is the system of organs within an organism which work together for reproducing new life. The major organs of reproduction system include the external genitalia (penis and vulva) as well as a number of internal organs including the gametes producing gonads (testicles and ovarian). Substances such as, fluid, hormones, and pheromones are also important to the effective functioning of the reproductive system. When the reproductive system affected by disease and is not able to work well that called infertile. Infertility primly refers to the biological inability of a person to conception. This may refer to the state of women who is unable to carry pregnancy (Maker, Toth, 2002) [8]. Infertility has increased by 4% since 1980. (Maheswari 2008) [9] about 40% involved with infertility are due to the men (Hudson 1987) [7]. Herbal medication has being progressively utilized all over the world. Never the less, herbal remedies are not without hazard and several cases of adverse reaction has been described. *Tribulus terrestris* (Zygophyllaceae) is one of these traditionally used Herbs. *The* extract seems to be able to increase androgen receptor (AR) in the rat hypothalamus. Another study notes increase in testosterone (El-tantawy *et al*, 2007) [11] also (Brown *et, al* 2000) found, it containing androstenedione in the herbal extracts this was not more effective at raising testosterone level, than androgen alone. On another hand, (Adaikan, *et al.* 2001) [1] found that *Tribulus* extract contained saponin at the major being protodioscin (PTN). This product was observed increase testosterone. In same year (2008) Milanov *et al* reject T. *Terrestris* increase testosterone levels. However, standardized extract containing at least 10% protodioscin will most definitely increase testosterone production. (Dehangan, *et al*. 2012) in their investigation to an alternative treatment of ovarian cysts, reported *Tribulus terrestris* extract on rats led to modification in domestic animals. This was explain that *Tribulus* success to impotency and improve sexual function because *Tribulus* have luteinizing effect on ovarian cyst which related to gonadotropin like activity (*Reproduction in domestic animals).* (Tomova *et al* 1987) [10].

2. Materials and Methods
Plant materials
T. terrestris fruits wear collected from Omdurman public market, in April (2013).\

Preparation of crude extracts the fruits
Ware washed, dried and crashed to obtain powder then extracted with distilled water on water bath for 3 hr and with 70% ethanol using soxhlet apparatus for 3 hr. the solvents proportion was 100 ml for each 10 g of fruits powder.

Experimental Design
12 *Rattus norvegicus* (6 male and 6 females) aged between (1-1.5) month old, were chosen randomly from retained rats. Measurements of the body weights and length with tails were taken at the start of the experiment.
All animals kept at room temperature with 25-27 ◦ C and at normal photo period 12\12 darkness\lightness for 4 weeks. A commercially-balanced feed (alcoholic extract mixed with food at 0.005g/ g of feed. A feed ration of 10% of the body weight was given twice per day for 4 weeks.
Preparation of Histological Slide

Data analysis
All values were expressed as average ± standard deviation. A comparison between groups was done by using ANOVA single factor (body and gonads weight increment study). *P* value of < 0.05 was considered significant.

3. Results and Discussion

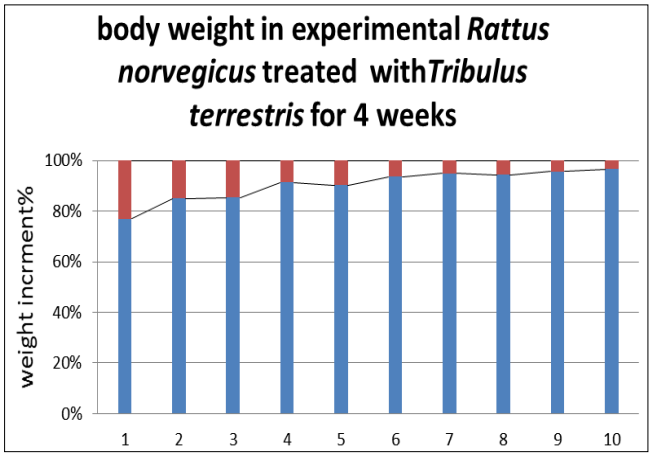


Fig 1: Effect of Tribulus terrstreis on Body Weight.

The mean body weight of animals in the treated group was significantly increased as compared to control group and the group which treated with water extract increased its weight more than the group treated with alcoholic extract.

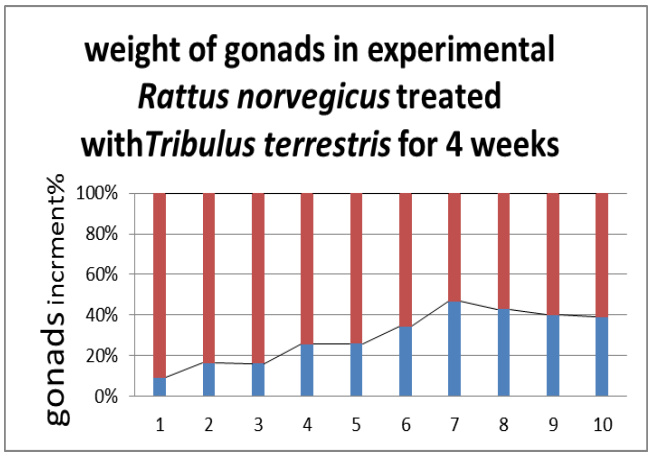


Fig 2: Effect of Tribulus terrstreis on Weight of gonads:

There was an increase in the weight of gonads treated groups compared with the control group. This increase was statistically significant (P=0.05, table). The increase was more in gonads of male rats treated with water extracts as shown by gono-somatic index.

Anatomical Investigations

Rats dissected by the end of the experiment showed variation in the stages of maturity in males treated and non-treated rats. However, the changes were great in males where the testes were descended externally to the scrotum sacs (plate No. A) And the great growth of the testes and the seminal vesicles as in plates (No. B & C). These changes were more confirmed histologically.

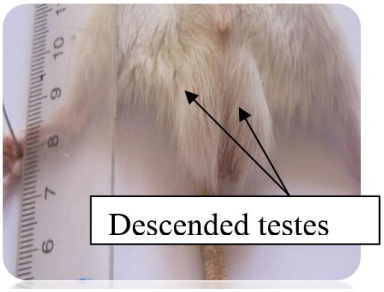


Plate 1A

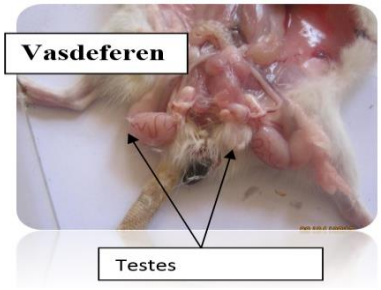


Plate 1B

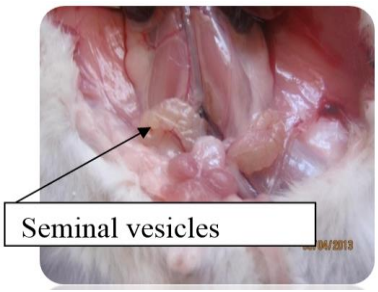
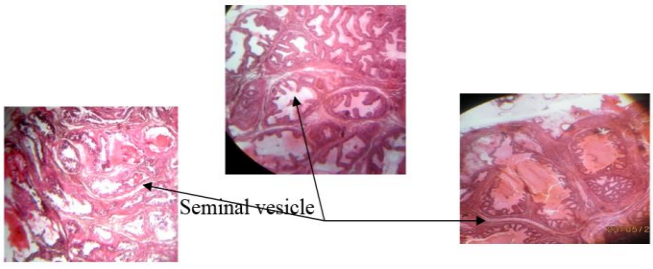


Plate 1C

Histological Observations of Testes

Light microscopy revealed that the seminiferous tubules in sectioned testes of rats treated by *Tribulu*s water extract were so much swollen with thin walls and flaccid cavities. Lumens were observed to be in better development (Group. A) and so for seminal vesicles (Group B). In non-treated male the testes in progress differentiation and maturation (Group. C).



Group A Group B Group C

Testosterone measurements: The sera concentrations of testosterone on control male rats showed progress increase as shown in table (1). As both treated male's reaches maturity, the testosterone recorded drops as shown in the initial and final records. These changes proved to be significant (p<0.05).

Table 1: show the testosterone concentration in albino rats.

group	Treatment	No.	Concentration(ng\dl)
1	Control	1	872.1
		2	1012.1
2	Water extract	3	821.1
		4	171.2
3	Alcohol extract	5	700.1
		6	35.5

4. Discussion

Observations on experimental group revealed that *Tribulus terrestris* administration resulted in increased body and testicular weight which were statistically significant when compared with the control. These findings agree with the findings of Gauthaman, (2002) [6] who showed that treatment of castrated rats with *Tribulus terrestris* extract resulted in increased body and prostate weight. This observed increase in body weight of treated rats he presumed was due to androgenic effect of *Tribulus terrestris*, producing a stimulus to increase the appetite. Androgens have a major role in the growth and differentiation of many tissues in addition to the organs of reproductions; Androgens are also responsible for the pubertal development of the testes. And also agree with Aruna, *et al* (2009) [3] observation on their experimental group revealed that *Tribulus* administrator resulted in increased body and testicular weight where compared with the control. The results of this study conclude that *Tribulus terrestris* has a complex stimulating effect on endocrine functions of the testes producing its precocious development.

5. References

1. Adaikan PG, Gauthaman k, Prasad RNV. History of herbal medicines with an insight on the pharmacological properties of Tribulusterrestris, informal health care. Journal 2001. 4(3):163-169.
2. Adaikan pg. proerecile pharmacological effects of Tribulus terrestris extracton the rabbit corpus cavernosum, 2002. (http://www.ncbi.nlm.nih.gov\pupmed\10748960).
3. Arun B, Taltir M, Waqas, Sand Bushra M. Effect of Tribulus. terstris on testicular development of immature albino rats D Biomedicavol, 2009; 25:63-68.
4. Brown GA, Vukovich MD, Reifenrath TA, *et al*. Effects of anabolic precursors on serum testosterone concentrations and adaptations to resistance training in young men. International. Journal of Sport Nutrition and Exercise Metabolism. 2000; 10(3):340-59.
5. Dehghan A, Esfandiria a, Bigdelis M. Alternative treatment of ovarian cysts with *Tribulus terrestris* extract: rat's model. Reproduction in domestic animals, 2012; 47(1):12-15.
6. Gauthaman K, Adaikan PG, Prasad RN. Aphrodisiac properties of *Tribulus terrestris* extract (Protodioscin) in normal and castrated rats. Life Sciences, 2002; 71(12):1385-96.
7. Hudson B. The infertile couple. Churchill-Livingstone, Edinburgh (in), 1987.
8. Makar RS, Toth TL. The evaluation of infertility. Amer. Jour. Clinc Pathol. 2002; 117(l):95-103.
9. Maheshwari A. Human Reproduction. Text "Effect of female age on the diagnostic categories of infertility, 2008, 538-542.
10. Tomova M. tribestan Preparation from Tibullus territories farmastiya. jornal, 1987; 73(6):40-42.
11. Walid H, El-Tantawy, Abeer Temraz, Omayma D, El-Gindi. Free serum testosterone level in male rats treated with Tribulus extracts International braz. Journal. 2007. http://www.newscientist.com/article.ns?id=dn1483 http://ijps.sums.ac.ir/files/PDFfiles/8th.pdf617876548.pdf