

EVALUATION OF ENHANCED SPERMATOGENIC ACTIVITIES OF BLACK MUSLI, *CURCULIGO ORCHIOIDES* IN THE INDIAN SPARROW, *PASSER DOMESTICUS*

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ABSTRACT

In the present study attempts are made to investigate the spermatogenesis enhancing properties of a hydro alcoholic root extract of black musli in experimental animal, *Passer domesticus* administered through food. Testes of experimental and controlled animals when studied under microscope, noteworthy enhanced in spermatogenic activities were observed in experimental animals due to the effect of extract of Black musli *Curculigo orchioides*. The conclusion derived in present investigation; provide that Black musli has spermatogenic activities enhancing properties.

Key words - Black Musli, *Passer domesticus*, spermatogenesis, enhancing properties.

INTRODUCTION

House sparrows are declining in number at alarming rates. They are added to the red data list of a bird species of conservation concern as there had been more than 50 % decline in the last 25 years. But in the forest area village Amdari, 10 km away from Isapur dam there was found to be abundance of the bird, Indian sparrow as well as the herb black musli in this region. It is investigated by many scientist of the world that the black musli, *C. Orchioides* has reproductive activity enhancing properties (Peter, 2011). In the Present investigation attempts were made to investigate the effect of black musli on the Indian sparrow *P. Domesticus*.

MATERIALS AND METHODS

Animals stock

Male animals, after trapping were brought to the laboratory and acclimatized for a month in cage. Matured males weighing only in the range of adults were trapped intended to use for investigation. They were fed on standard diet and water *ad libitum*. The animals were housed at room temperature ($23 \pm 3^{\circ}\text{C}$) on reversed day light cycle 06.00 hrs to 18.00 hrs)

Plant Material

Rhizomes of *Curculigo orchioides* Gaertn were collected near the village Amdari which is 10 km away from Isapur Dam of Yavatmal District Maharashtra. They were taxonomically identified at the department of Botany, G.S.G. College UKD under the guidance of Dr. V.N. Kadam, renowned

researchers from the field of medicinal plants. The dried powdered rhizomes were defatted by extraction with petrolcum ether (60 to 80°C). The defatted plant material was then extracted with ethanol (95%) and dried under vacuum (4.08% w/w).

Preparation of Test sample

Ethanol extract (1%) and sildenafil citrate (0.05%) were suspended in 0.2% of gum acacia and administered orally (p.o.) using metal canula. Testosterone proportionate was suspended in arachis oil and was administered subcutaneous (SC.)

Treatment

The animals were divided in two groups (5 animals in each groups). Group I animals were served as control and only vehicle i.e. 0.2 % gum acacia suspension was administered and in group II was administered with ethanolic extract of orchioides (100 mg/kg b.w.) daily.

After 30 days of treatment the body weight of animals were noted down after which the control as well as treated group were killed by rapid decapitation. Testes were removed and cut into small pieces passed through series of micro techniques, stained with Eosin and analysed microscopically.

Histometric measurement such as diameter of the testis, seminiferous tubules and leydig's cell nucleus of 30 circular sections by using ocular and stage micrometers. The numbers of different spermatogenic elements were also determined.

RESULTS AND DISCUSSION

Results obtained from treated animals in the present investigation, when compared with those of control it was found that there was prominent effect of ethanolic extract of black musli on the Histometry and histological structures of the testis, seminiferous tubules, germinal epithelium, sertoli cells, leydigs cells, luminal part of seminiferous tubule, nucleus and blood vessels. There was found to be significant increase in the length, width, size & weight of male reproductive

organs. There was also found the increase in length, width and size of aforementioned histological structures. In treated animals, the lumen of ovary seminiferous tubules had found enormous number of spermatozoa. Sertoli cells were enlarged highly and rich in nutrients as evidenced by granular cytoplasm. Leydigs cells were showed healthy hypertrophy with enlarged nucleus. The blood vessels of the testes were found to be highly dilated.

Table 1: Represented the histometric measurement and histological texture of testis after administering 2 % gum acacia suspension i.e. vehicle to the control and 100 mg/kg b.w. Black musli extract daily in experimental animals in Indian sparrow *Passer domesticus*.

Sr. No.	Histometric/Histological str.of	Increase in Volume (in%)	Average volume in control animals	Average volume in experimental animals
1	Testis	20	1057.24 ± 38.17 mm	1268.28 ± 42.24 mm
2	Seminiferous tubule	16	48.26 ± 1.19 microns	55.98 ± 1.14 micron
3	Sertoli cells	21	4017 μm^3	4860.57 μm^3
4	Leydig cells	23	877 microns	1078 microns
5	Nucleus in Leydig cells	07		
6	Tubular length	29	14.28 ± 1.13 meters	18.32 ± 1.7 meters
7	Sperms	20	718.21 ± 27.11 mm	861.85 ± 29.17 mm
8	Blood vessels	12		

If we go in to lane of the History, herbal medicines were found to be widely used for the treatment and prevention of various diseases in Africa and developing countries of the world (Diallo *et al.*, 2009). The black musli, the stemless herb has been used by the aboriginal people of the Umarkhed and allied region since many centuries. It is used as tonic, nerve as well as on arthritis, weak kidneys and impotency. It is used as sex tonic and aphrodisiac all over the world by healers. It seems strange to reportedly say that even animals like bhalu (wild bear) consumes it few days prior to intercourse (Oudhia, 2001).

The results obtained in the present investigation might be due to the complex interplay between structural element of the testis and endocrine system. The statement is corroborates with the investigation made by Mc. Lachlan (2000) and Hadziselimovic *et al.*, (1997) wherein it was investigated that abundance of spermatozoa in seminiferous tubules clearly indicate the spermatogenesis which was regulated by the hormone.

Testis: In present investigation, the anabolic and spermatogenic effect was evidenced

by weight gains of the testis It supports the view of Chavan and *et al.*, (2010) in rats wherein there was significant pendiculatory activity in male bird after 14 days of the investigation.

Seminiferous tubule: In the present investigation, the lumen of the seminiferous tubules was found to contain enormous number of spermatozoa. It might be due to higher androgen level in blood. The observations were coincided with the investigation made by Islam and *et al.*, (1991) wherein they suggested that the antioxidant compound also alter the androgen level and change in androgen level like testosterone may responsible for spermatogenesis. Similar types of observation were made by Sikka, (2001) who investigated that antioxidant mechanism protect against oxidative damage to gonadal cells and mature spermatozoa. The present investigation also gets the support by the view of Bafna and Mishra (2005).

Germinal epithelium: Cells size & its number were found to be increased and also appeared to be hyperactive in the present investigation. This observation got the support by the investigation made by Chavhan *et al.*, (2010).

Sertoli cells:

Cells were found to enlarge and with dense granulated cytoplasm. Granulated cytoplasm of sertoli cells may provide nourishment to spermatozoans. Similar types of observations were made by Mujumdar *et al.*, (1965).

Leydig cells and its nucleus: Cytoplasm of the leydig cells was found to be dark stained and with enlarged the nucleus. It might be due to steroid synthesis under the direct or indirect effect of the extract of black musli.

Blood vessels in Testis: Blood vessels of the testis were found to be highly dilated. The present investigation corroborates with the investigation made by Chavan *et al.*, (2008). The present investigation also got the support by the information sought by Oudhia (2001, 2002, and 2003).

In nutshell it could be concluded that overall significant increase in the spermatogenic process and histometry of the testis is due to spermatogenic enhancing properties of the black musli.

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