



**International Journal of Biology, Pharmacy  
and Allied Sciences (IJBPAS)**

*'A Bridge Between Laboratory and Reader'*

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## **ACTION OF FENUGREEK SEED EXTRACT AGAINST HALOPERIDOL INDUCED SEXUAL DYSFUNCTION IN MALE WISTAR RATS**

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**Received 20<sup>th</sup> Oct. 2024; Revised 15<sup>th</sup> Dec. 2024; Accepted 15<sup>th</sup> Feb. 2025; Available online 1<sup>st</sup> March 2026**

<https://doi.org/10.31032/IJBPAS/2026/15.3.9928>

### **ABSTRACT**

Increasing response to sexual stimuli in healthy people taking a specific fenugreek seed extract (Testofen, Gencor Pacific Ltd) by mouth seems to improve ability and interest in sex in males. Sexual problems that prevent satisfaction during sexual activity. In this study, we evaluated the in vivo aphrodisiac activity of the fenugreek seed extract against haloperidol induced sexual dysfunction. After dosing, the sexual behaviors of male rats were observed, recorded, analyzed, and compared with those of the vehicle group. The results show that the extract significantly decreased the intromission latency of sexually naive male rats and the extract improved a range of other measured sexual parameters. The results suggest that the extract could enhance libido as well as facilitate erectile function in male rats and that could contribute to the libido-enhancing activity of this ethnomedicinal herb.

**Keywords: Mount frequency, Intromission frequency, Mount latency, Intromission latency, in vivo sperm count, biochemical estimation**

## INTRODUCTION

Sexual needs contribute to a partner's satisfaction throughout his life. Couple's pleasure quality life will undoubtedly be hampered any sexual disturbance. Numerous illnesses, including sickness, old age, exhaustion, life stress, frequently disturb sexual life, resulting in couple's incapacity to experience sexual fulfillment. This condition indicated sexual dysfunction partner's [1]. According to research by Edward O. Laumann, *et al.* (1999) done in United States, 14.8% men between ages 18 to 59 reported having no sexual desire. Whereas premature ejaculation may be source quick climax experienced by 30.6% people 10.2% men report having trouble getting or keeping an erection, also known as erectile dysfunction (ED). Although erectile dysfunction drug sildenafil is very effective in treating this condition, there are still a lot of unwanted side effects. In 3–10% of people, sildenafil increases light sensitivity, impaired vision, colour blindness (blue–green). Additionally, taking Sildenafil with medications that include organic substances increases the risk of systemic hypotension, impaired liver function etc. Conventional medicine is required to overcome the problem associated by using sildenafil as an alternative treatment. Aphrodisiacs are substances that heighten

desire for sexual activity. The Greek goddess of love and sexuality Aphrodite inspired the name. For decades, both men and women have tried using various drugs to improve their sexual encounters. It has a long history in all societies to alter people's sexual experiences through drugs made from plants, animals, and synthetic elements. Although the drug sildenafil is quite efficient in treating erectile dysfunction, it also has several negative effects, including those that are 3–10% [2].

Drugs can have beneficial side effects, one of which is sexual dysfunction, despite the fact that they are extremely useful in treating a range of illnesses and diseases. Sexual dysfunction is fairly widespread in the general population. Prevalence of sexual dysfunction is estimated to be between 43% and 31% for men and women, respectively. Compared to female sexual dysfunction, male sexual dysfunction is ten times more directly linked to physical health and aging. Treatment is frequently beneficial for men with sex problems. However, owing to ignorance, shame, or humiliation, persons who have problems with sexual performance could be reluctant to discuss them. Since the discovery of the medication sildenafil or Viagra, which affects penile erections, erectile dysfunction has come to be recognized as a condition that is increasingly frequent

treatable [3, 4]. With ongoing psychosis, sexual desire, activity, satisfaction decline. Pharmaceutical rapy for psychotic disorders is typically ineffectual, despite fact that therapeutic choices have greatly improved over past century. Although medications can be used to treat se issues, one drawback is high price. Herbal medicine or alternative therapies have been increasingly used into treatment schizophrenia in order to increase therapeutic efficacy decrease side effects associated with antipsychotic therapy. Herbal medicine has ability to lessen side effects antipsychotic medication. A variety organic compounds that are utilized as aphrodisiacs. is chosen for current investigation. It is used as a Viagra alternative since it works wonders at boosting male virility. An aqueous preparation dried increases libido, vigor, sexual excitement in wistar rats. Extract greatly raises sperm count [5]. Antipsychotic medication effects on sexual require additional research there're fore, approach this research work is to evaluate protective action extract against haloperidol induce sexual dysfunction.

## MATERIALS AND METHODS

### Collection and procurement.

Dried Fenugreek seed were procured from local area sangli Maharashtra and authentication was done at kasturbai Walchand College, Sangli by Mr. wadhmare HOD botany department.

- **Preparation of fenugreek seed aqueous extract**

Aqueous extract was prepared by adding seeds to distilled water in ratio 50g: 100ml in beaker, resulting solution was filtered through muslin cloth residue extract was air dry. Dry aqueous extract was stores dry container at room temperature

- **Qualitative Phytochemical investigation**

Phytochemical investigations were performed as per Khandelwal K.R [6]

- **Experimental animals:** Male and female albino rats of wistar strain weight about 200-250g obtained from animal house of Appasaheb Birnale College of Pharmacy Sangli. The experiments were carried out after approval & clearance from IAEC, A.B.C.P. Sangli. [Protocol No. IAEC /A.B.C.P./02/2023]

- **Experimental design:**

Table 1: Experimental design

Sr. No.	Drug used	Dose and route of administration (P.O.)	Duration
1	Normal (distilled water)	-	28 days
2	Haloperidol	0.5 mg/kg	28 days
3	Sildenafil citrate	5 mg/kg	28 days
4	Haloperidol + fenugreek seed	0.5 mg/kg + 450mg/kg	28 days
5	Fenugreek seed	450 mg/kg	28 days

- **Pharmacological screening methods:**

- A) **Physical methods**

- 1) **Libido test [19]:**

parameter were evaluated

1) **Mount frequency** Mounting is defined as climbing of one animal by another usually from posterior end with intention of introducing one organ into another. Operationally defined as male assuming copulatory position but failing to achieve intromission. Mount Frequency (MF) is therefore defined as number of mounts without intromission from time of introduction of female until ejaculation.

2) **Intromission frequency**

Intromission is introduction of one organ or parts into another. e.g. Penis into vagina. Intromission Frequency (IF) is therefore defined as number of intromissions from time of introduction of female until ejaculation.

2) **Mount latency** Mount latency (ML) is defined as time interval

between introduction of female and first mount by male.

4) **Intromission latency** Intromission latency (IL) is time interval from time of introduction of female to first intromission by male. This is usually characterized by pelvic thrusting, and springing dismounts.

**B) Orientation behavior Analysis**

The effects of Fenugreek seed Behavior of male rats were assessed using the following parameters. • Self exploratory behavior which included non-genital grooming and genital grooming. • Environmental exploring includes rearing, climbing, and exploring the surroundings.

Rat behavior was digitally captured using camera. Each behavior Parameters episode was counted. 3. Every episode rats performed was given a particular number of points This determined final score. 4. Daily observation was made and results were recorded for day 0 and Following days of experiments

Table 2: System of grading from 1 to 9 was chosen

Score	Activity	Score	Activity
0	No sexual activity	5	Rears and climbs sexually
1	No interaction, rear, and climbs on chamber	6	Pursues and sniffs another rat
2	Sniffs another rat	7	Tries to mount but easily discouraged
3	Self exploratory behaviour	8	Mounts with an integrated deliberate manner
4	Grooms female rat anywhere	9	Reflex and almost involuntary mount

**1) Determination of hesitation time of male & attraction of male towards female [20]:**

**Procedure:** In this experiment a barrier separated observational chamber was used. Observational chamber male was put on one side, while female who was Receptive was on or side of chamber. Barrier prevents direct animal contact but permits auditory, visually and Tactile inputs on their side. Hesitation time was recorded as amount of time (sec) taken by male rat Before making an attempt to cross /pass barrier. During a 15 minute observation period, female attraction was measured by Assigning a score between 0 to 5. Each time male rats crossed barrier completely it received a score Of 5 While its attempt to climb were given score of 2 and disinterest ion Climbing received a score of 0. Days 0, 7,14,21,28 of experiment periods were used to record reading. Male rats from each group were put through an experiment and results for both attraction and hesitation times were reported.

**A) Effect of aqueous extract of Fenugreek seed on sexual organ weight [21]**

**Procedure:** 28 day following the Fenugreek seed extracts Administration, body weight of all group were measured, then all animal Were sacrificed for isolation of sexual organs. Prostate gland, penis, epididymis,

testicle, seminal vesicle were all Properly removed and weighed.

**B) In vivo sperm count: [22]**

**Procedure:** All animals were euthanized by CO<sub>2</sub> chamber on day 28. Left and right Epididymis were isolated and freed from adjoining fats. Epididymis caudal section was removed and it was completely squeezed Using a needle and forceps to produce milky solution. Sperm solution was prepared by mixing with diluting fluid and using Physiological saline volume was diluted to 10 ml (0.9NaCl). This diluted suspension was shaken thoroughly and placed as droplet on Neuberger's haemocytometer. The average number of sperm cell per Chamber were counted Calculations for sperm count.

Total sperm count in four squares (each of 0.1mm<sup>3</sup>) =N  
Sperm count/cauda epididymis =N×1.25×10<sup>5</sup>.

**Biochemical studies: [23, 24]****1. Estimation of serum cholesterol.**

**Procedure:** Blood withdrawal retro-orbital bleeding was performed under general Anesthesia urethane (1.25/kg) and blood are collected. Blood was kept for 30 min to achieve coagulation. Serum was obtained by centrifugation at 2500 rpm for 10 minutes. Supernatant pale yellow colored serum was collected. Serum cholesterol was determined by Chod- PAP method. Blank solution was prepared by adding 1ml of cholesterol reagent.

Standard solution was prepared by adding 1ml of cholesterol reagent and 0.01 ml of standards cholesterol 200mg/dl. Test solution contains 1ml cholesterol reagent and 0.01ml of serum both are mixed and incubated at 37°C for 5 minutes. Absorbance of standard (abs) and test solution (Abs.T) was taken against blank (Abs.B) and absorbance was taken at 505 nm.

**Statistical analysis:** Values are expressed as

Mean ±SEM, n=6per treatment group. Statistical analysis was made using 2 way ANOVA (analysis of variance) followed by Dunnett’s test using Graph Pad prism software \*p<0.05 was considered as criteria significance.

**RESULTS:**

**Phytochemical screening results:**

**Table 3: Table of results phytochemical screening of aqueous extract of fenugreek seed**

Sr.no.	Phytochemical	Results of aqueous extract
1	Alkaloids	+
2	Glycoside	+
3	phytosterol	+
4	carbohydrate	+
5	saponin	+
6	Flavenoid	+
7	protein	+
8	Gum mucilage	+
9	Fives oil fats	+

Note: (-): Indicates the chemical constituent is absent. (+): Indicates the chemical constituent is Present

**Physical Methods: Libido Test**

**1) Mount frequency**

**Table 4: Effect of aqueous extract of fenugreek seed on mounting frequency in haloperidol treated rats**

Group	Day 0	Day 7	Day 14	Day 21	Day 28
Normal	2.433±0.2062	2.608±0.013	2.736±0.477	2.840±0.042	2.841±2.841
Haloperidol	2.667±0.032	2.117± 0.209	1.802±0.023	1.322±0.011	1.109±0.2341
		ns	ns	ns	#
Sildenafil citrate + Haloperidol	3.168± 0.019	3.627±0.022	5.669±0.0490	8.193±0.036	10.161±0.501
		ns	***	***	***
Fenugreek seed + Haloperidol	3.218±0.011	3.562±0.023	4.014±0.030	5.775±0.015	6.666±0.774
		ns	***	***	***
Fenugreek seed	3.403±0.016	3.834±0.027	5.17±0.267	8.193±0.023	10.19±0.226

Value are expressed as mean ±SEM n=6 per treatment group \*p<0.05 is considered as criteria for significance. Statistical analysis was made using 2 way ANOVA (analysis variance) followed by Dunnetts test # control compared with normal,\* indicates all group compared with control

**Physical Methods: Libido Test**

**1) Mount frequency**

**Table 5: Effect of aqueous extract of fenugreek seed on mounting frequency in haloperidol treated rats**

Group	Day 0	Day 7	Day 14	Day 21	Day 28
Normal	2.433±0.2062	2.608±0.013	2.736±0.477	2.840±0.042	2.841±2.841
Haloperidol	2.667±0.032	2.117± 0.209	1.802±0.023	1.322±0.011	1.109±0.2341
		ns	ns	ns	#
Sildenafil citrate + Haloperidol	3.168± 0.019	3.627±0.022	5.669±0.0490	8.193±0.036	10.161±0.501
		ns	***	***	***
Fenugreek seed + Haloperidol	3.218±0.011	3.562±0.023	4.014±0.030	5.775±0.015	6.666±0.774
		ns	***	***	***
Fenugreek seed	3.403±0.016	3.834±0.027	5.17±0.267	8.193±0.023	10.19±0.226

## 2) Intromission frequency:

Table 6: Effect of aqueous extract of fenugreek seed on intromission frequency in haloperidol rats

Group	Day 0	Day 7	Day 14	Day 21	Day 28
Normal	2.621±0.021	2.523±0.220	2.330±0.332	2.266±0.377	2.206±0.051
Haloperidol	2.467±0.332	2.331± 0.332 ns	1.602±0.023	1.119±0.021 ns	0.467±0.234 ns
Sildenafil citrate + Haloperidol	2.524± 0.018	3.323±0.016 Ns	4.521±0.0390 ****	7.193±0.046 ****	8.122±0.301 ****
Fenugreek seed + Haloperidol	1.317±0.011	2.562±0.013 Ns	3.014±0.040 ***	4.774±0.015 ****	6.666±0.764 ****
Fenugreek seed	1.031±0.017	2.824±0.037 ****	5.123±0.267 ****	7.114±0.023 ****	9.091±0.126 ****

## 3) Mount latency:

Table 7: Effect of aqueous extract of fenugreek seed on Mount latency in haloperidol rats

Group	Day 0	Day 7	Day 14	Day 21	Day 28
Normal	287.1±2.004	295±3.220	297±4.332	298±6.377	299±7.051
Haloperidol	274±3.342	299± 2.132 ns	300.1±2.023 ns	316.1±0.031 ##	328.01±0.234 ###
Sildenafil citrate + Haloperidol	174.3± 2.316	186±0.016 Ns	201.6±0.0290 ****	223.7±0.046 ****	250.1±0.201 ****
Fenugreek seed + Haloperidol	231±0.011	270.06±0.013 *	299±0.030 ***	312.0±0.015 ****	315.03±0.764 ****
Fenugreek seed	161±0.018	203±0.039 ****	240±0.267 ****	257±0.023 ****	289±0.126 ****

## 4) Intromission latency:

Table 8: Effect of aqueous extract of fenugreek seed on intromission latency in haloperidol rats

Group	Day 0	Day 7	Day 14	Day 21	Day 28
Normal	297.1±2.014	270±2.120	299±4.332	305±0.377	306±7.051
Haloperidol	297±3.142	310± 2.122 #####	325±2.023 #####	335.1±0.03 1 #####	372.01±0.22 4 #####
Sildenafil citrate+ Haloperidol	184.3± 2.116	195±0.017 Ns	195.6±0.029 0 ****	250.7±0.03 6 ****	260.1±0.201 ****
Fenugreek seed + Haloperidol	241±0.011	280.06±0.013 Ns	310±0.030 ***	326.0±0.01 5 ****	340.03±0.76 4 ****
Fenugreek seed	221±0.018	243±0.029 ****	260±0.217 ****	271±0.013 ****	310±0.136 ****

## 6.4 Orientation behavior test

### a) Sniffing

Table 9: Effect of aqueous extract of fenugreek seed on sniffing in haloperidol rats:

Group	Day 0	Day 7	Day 14	Day 21	Day 28
Normal	11.16±0.0141	12.19±0.46	12.30±0.332	11.82±0.377	11.63±7.041
Haloperidol	12.66±1.142	10.54± 0.122 ns	7.00±.0231 #####	6.67±0.0312 ###	3.186±0.234 #####
Sildenafil citrate + Haloperidol	14.3± 0.116	16.83±0.016 **	18.19±0.0291 ****	19.71±0.026 ****	20.16±0.300 ****
Fenugreek seed + Haloperidol	11.14±0.021	13.18±0.014 ***	15.68±0.020 ***	17.83±0.014 ****	18.03±0.164 ****
Fenugreek seed	11±0.018	12.98±0.029 ****	13.98±0.217 ****	15.60±0.012 ****	16.41±0.146 ****

## b) Licking

Table 10: Effect of aqueous extract of fenugreek seed on licking in haloperidol rats:

Group	Day 0	Day 7	Day 14	Day 21	Day 28
Normal	11.16±0.0111	11.38±0.46	12.40±0.312	12.82±0.217	13.63±7.021
Haloperidol	10.46±0.142	8.09± 0.438 ns	5.118±.0211 ##	4.10±0.0211 #####	3.216±0.334 #####
Sildenafil citrate + Haloperidol	13.8± 0.16	14.53±0.016 ns	16.29±0.091 ****	16.64±0.056 ****	17.60±0.300 ****
Fenugreek seed + Haloperidol	14.22±0.011	15.27±0.009 ns	17.68±0.008 ***	18.33±0.006 ****	19.03±0.005 ****
Fenugreek seed	13.22±0.078	14.68±0.029 ns	16.98±0.117 ****	18.60±0.011 ****	19.41±0.116 ****

## c) Rearing

Table 11: Effect of aqueous extract of fenugreek seed on rearing in haloperidol rats

Group	Day 0	Day 7	Day 14	Day 21	Day 28
Normal	11.16±0.0111	11.38±0.46	12.24±0.312	12.82±0.217	13.63±7.011
Haloperidol	10.46±0.142	8.121± 0.238 #####	5.118±.0211 #####	4.127±0.0211 #####	3.216±0.314 #####
Sildenafil citrate+ Haloperidol	13.8± 0.16	14.53±0.016 *	16.29±0.091 ****	17.64±0.056 ****	17.60±0.400 ****
Fenugreek Seed + Haloperidol	14.22±0.011	15.27±0.009 ns	17.68±0.008 ***	18.33±0.006 ****	19.03±0.005 ****
Fenugreek seed	13.22±0.078	14.68±0.029 **	16.98±0.117 ****	18.60±0.011 ****	19.41±0.116 ****

## d) Climbing:

Table 12: Effect of aqueous extract of fenugreek seed on climbing in haloperidol rats

Group	Day 0	Day 7	Day 14	Day 21	Day 28
Normal	11.16±0.0111	11.38±0.46	12.24±0.312	12.82±0.217	13.63±7.011
Haloperidol	10.46±0.142	8.09± 0.238 ns	5.118±.0211 ##	4.10±0.0211 #####	3.216±0.314 ns
Sildenafil citrate + Haloperidol	13.8± 0.16	14.53±0.016 ns	16.29±0.091 ****	16.64±0.056 ****	17.60±0.400 ****
Fenugreek seed + Haloperidol	14.22±0.011	15.27±0.009 ns	17.68±0.008 ***	18.33±0.006 ****	19.03±0.005 ****
Fenugreek seed	13.22±0.078	14.68±0.029 ns	16.98±0.117 ****	18.60±0.011 ****	19.41±0.116 ****

## 6.5. Hesitation time test of Male and attraction of Male towards Female:

## a) Hesitation time test of Male

Table 13: Effect of aqueous extract of fenugreek seed on hesitation Time in haloperidol rats:

Group	Day 0	Day 7	Day 14	Day 21	Day 28
Normal	12.16±0.0111	12.38±0.46	11.24±0.312	12.92±0.117	12.93±0.188
Haloperidol	10.46±0.132	11.46± 0.218 #####	13.118±.0221 #####	16±0.0211 ns	18.116±0.214 ns
Sildenafil citrate+ Haloperidol	13.9± 0.16	15.53±0.017 ns	18.39±0.081 ****	20.64±0.026 ****	22.50±0.200 ****
Fenugreek seed + Haloperidol	13.11±0.010	15.38±0.006 ns	17.77±0.008 ***	18.23±0.007 ****	21.24±0.003 ****
Fenugreek seed	13.10±0.078	14.78±0.029 **	17.88±0.217 ****	18.40±0.011 ****	21.41±0.116 ****

**Attraction of Male towards Female:**

**Table 14: Effect of aqueous extract of fenugreek seed on Attraction Of Male towards Female in haloperidol rats**

Group	Day 0	Day 7	Day 14	Day 21	Day 28
Normal	9.567±0.555	8.999±0.221	10±0.6646	11±0.7756	10±0.8893
Haloperidol	10.22±0.443	9.86±0.767 ns	7.81±0.4116 #	6.833±0.123 ###	4.899±0.222 ####
Sildenafil citrate+ Haloperidol	12±0.5861	14±0.6678 ns	15.66±0.645 ns	16.066±0.434 ***	17.67±0.8890 ****
Fenugreek seed + Haloperidol	10.16±0.503	12.01±0.6701 ns	13.5±0.5468 ****	15.7±0.567 ****	16.67±0.9088 ****
Fenugreek seed	11.18±0.345 ns	12.16±0.457	13.5±0.645 ****	15.9±0.347 ****	17.87±0.534 ****

**Effect on sexual organ weight**

**Table 15: Effect of aqueous extract of fenugreek seed on body weight And male reproductive system in haloperidol rats:**

Parameter		Normal	Haloperidol group	Haloperidol + sildenafil citrate	Fenugreek seed+ haloperidol	Fenugreek seed
Body weight	Initial weight	260.8±4.308	220.9 ±3.806ns	350.1±3.504 ns	320.1±3.567 ns	310.6±720 ns
	Final weight	263.6±5.308	223.9 ±3.806ns	352.1±3.504 ns	322.1±3.567 ***	313.6±720 **
Testis		1.29±0.013	0.95±0.012 ####	1.65±0.014 ****	1.42±0.016 ****	1.43±0.014 **
Epididymis		0.302±0.013	0.284±0.023 ns	0.38±0.018 ns	0.273±0.020 ns	0.428±0.018 ns
Seminal vesicle		1.41±0.018	0.889±0.66 ###	1.718±0.016 ****	1.558±0.013 ****	1.63±0.014 ****
Penis		0.3±0.037	0.261±0.013 ns	0.458±0.011 ns	0.416±0.045 ns	0.222±0.60 ns
Prostate gland		0.60±0.011	0.552±0.012 ns	1.4020.±0.011 ns	0.856±0.012 ****	1.052±0.012 ****
Vas deference		0.121±0.012	0.092±0.011 ns	0.11±0.01 ns	0.147±0.010 ns	0.15±0.005 ns

**In vivo sperm count:**

**Table 16: Effect of aqueous extract of fenugreek seed on sperm count In haloperidol rats:**

Treatment groups	Sperm count(million/ml)
Normal	47.05±0.60
Haloperidol	28.06±0.996#### (↓38.52%)
Sildenafil citrate+ Haloperidol	30.02±0.600 ns (↑3.38%)
Haloperidol + Fenugreek seed	48.09±0.871**** (↑ 67.99%)
Fenugreek seed	50.75±1.342 **** (↑76.69%)

**Biochemical studies:**

**Estimation of testicular serum cholesterol:**

**Table 17: Effect of aqueous extract of fenugreek seed on serum Cholesterol In haloperidol rats**

Treatment groups	Cholesterol (mg/dl)
Normal	88.23±3.237
Haloperidol	101.9±4.230 ns
Haloperidol +Sildenafil citrate	140.86±1.759 ns (↑ 39.07%)
Haloperidol + Fenugreek seed extract	103±1.359 ns (↑ 3.01)
Fenugreek seed extract	111.2±2.244 *** (↑ 9.32%)

## Estimation of serum testosterone level

Table 18: Effect of aqueous extract of fenugreek seed on serum Testosterone In haloperidol rats:

Treatment groups	Cholesterol (mg/dl)
Normal	83.23±3.237
Haloperidol	101.9±4.230 ns
Haloperidol+Sildenafil citrate	141.86±1.759 ns (↑ 40.07%)
Haloperidol + Fenugreek seed extract	102±1.359 ns (↑ 3.01)
Fenugreek seed extract	110.2±2.244 *** (↑ 9.32%)

### DISCUSSION:

One most widely used antipsychotic medication is haloperidol. Treatment with antipsychotics is typically required for a long time most significant medication side effect in psychotic individual is sexual dysfunction, decrease libido arousal dysfunction, erectile dysfunction, and problem with ejaculatory orgasmic function. In majority research, sexual or relationship issues were reported by 62% males 25% women with schizophrenia. Examining sexual function both before after beginning an antipsychotics treatment is only approach to accurately determine medication's real impact [24]. In present research work aqueous extract Fenugreek seed has been selected for evaluation aphrodisiac activity. It is used therapeutically in ayurvedic medical system. Its aphrodisiac qualities have proven to particularly beneficially for those with erectile dysfunction & to boost male potency. Kumavat *et al*, reported that numerous phytochemicals, including saponin (yamogenin), steroids (diosgenin), alkaloid,

flavonoid are found in results phytochemical investigation present research work also showed presence saponin, alkaloid, flavonoids, steroids, carbohydrate, proteins, in aqueous extract Fenugreek seed. According to finding from ahmad ana aslam some bioactive substance like saponin, alkaloids, flavonoids, steroids, carbohydrate, protein are crucial in order to increase endogenous testosterone levels in man sexual behavior. Such as steroids that increase production, alkaloids by broadening blood vessels reproductive organ. Through a NO based mechanism, saponin stimulate gonadal tissue CNS where as flavonoids increase their through production testosterone or by halting its metabolic decline [25]. Effect aqueous extract fenugreek seed on sexual behavior in rats received haloperidol is investigated by employing different pharmacological models like libido test, orientation behavior analysis, and determination hesitation time attraction towards female, biochemical histopathological studies. Animal model eventually be required to fully comprehend

fundamental etiology sexual dysfunction.

### **Physical methods:**

#### **Libido Test:**

Sexual behavior is controlled neurochemically, with dopamine acting in an excitatory serotonin in an inhibitory manner. Sexual activity is correlated with a rise in activity central dopaminergic system. One main mechanism behind antipsychotic-induced sexual dysfunction has been identified as direct dopamine D<sub>2</sub> receptor antagonist action. Dopamine D<sub>2</sub> antagonist reduces sexual motivation in mesolimbic dopamine terminal regions while interventions in medial preoptic area. Primary integrative space for male sexual behavior is medial preoptic area. Dopamine is a neurotransmitter that influences male sexual behavior in medial preoptic area. Dopamine antagonist like haloperidol may bind to both se brain regions which could result in reduces sexual drive, genital responses, copulation. High D<sub>2</sub> occupancy haloperidol in male rats is linked to detrimental effects on sexual function.

#### **Mounting frequency intromission frequency**

Increases in mounting frequency intromission frequency which are indicators libido would indicate an increase in libido. Haloperidol treated group (0.5mg/kg) resulted in a steady decline in mount frequency intromission frequency (p<0.05) as haloperidol has

negative effect on sexual function as reported by X Zhang *et al.* Co- administration sildenafil to haloperidol – treated group also markedly raised MF, IF on 28<sup>th</sup> day treatment period. A test for libido reveals that co-administration at doses 450mg/kg to haloperidol – treated group significantly enhanced mounting frequency (MF) intromission frequency (IF) progressively on every 7<sup>th</sup>, 14<sup>th</sup>, 21<sup>th</sup>, 28<sup>th</sup> day. Earlier days co-administration at 450 mg/kg dose revealed consistent in MF as well as IF (p<0.0001) on day 28<sup>th</sup> in comparisons to treated control group haloperidol at 0.5 mg/kg dose [26].

#### **Mount latency intromission latency:**

Indicators decrease sexual arousal include mount intromission latencies (ML, IL) decrease mount intromission latencies (ML, IL) are a sign sexual excitement. A decline in this parameter is a sign increased sexual arousal. Haloperidol treated group 0.5mg/kg resulted in a steady increase in mount latency intromission latency (p<0.0001) because haloperidol reduces sexual motivation as reported by X. Zhang *et al.* re is marked decrease in ML, IL time (p<0.0001) on 28th day in stard group. AETGFG at doses 450mg/kg significantly decrease mount latency intromission latency progressively on every 7<sup>th</sup>, 14<sup>th</sup>, 21<sup>th</sup>, 28<sup>th</sup> day.

**Orientation behavior analysis:**

One crucial factor in determining a rodent's aphrodisiac activity where behavioral activities male rats, toward surroundings, towards themselves and towards female were observed. Observed parameters are as follows: Number sniffing, licking parameters are reduced in haloperidol treated group progressively on every 7<sup>th</sup>, 14<sup>th</sup>, 21<sup>th</sup>, 28<sup>th</sup> day from male to female during entire observation period. Number sniffing licking is more significant increased standard group on 28<sup>th</sup> day study. group treated with haloperidol 0.5 mg/kg + 450mg/kg are showed more sniffing, licking, towards female. Steadily on 7<sup>th</sup>, 14<sup>th</sup>, 21<sup>th</sup>, 28<sup>th</sup> day. Rearing & Climbing score are reduced in control group significantly as compared to normal treatment with sildenafil Citrate (standard) increased rearing, climbing frequency significantly consisting on 7<sup>th</sup>, 14<sup>th</sup>, 21<sup>th</sup>, 28<sup>th</sup> day.

**Determination hesitation time male attraction male towards female:**

In case haloperidol treated group hesitation time extended to 17 seconds up to 28<sup>th</sup> in comparison to control group (06 seconds) ( $p < 0.0001$ ). After co-administration sildenafil to haloperidol treated group significant reduction (06 seconds) ( $p < 0.0001$ ) in hesitation time is observed. Hesitation time 450mg/kg extract is comparatively similar to

0.5mg/kg+ 450mg/kg fenugreek seed 28<sup>th</sup> day. Haloperidol treated group showed a considerably lower score for female attraction as compared to normal which is recovered in extracts treated groups. Score increased in Haloperidol + Sildenafil Citrate, Haloperidol+ fenugreek seed, alone group treated animals [27].

**Effect on sexual organ weight histological studies:****Body weight:**

When compared to normal body weight male rats in haloperidol treated group is significantly reduced after 28 days treatment. A significant increase in weight is seen after 28 days in standard group.

**Sexual organ weight:**

Haloperidol has varying effect on genital organ weight. When compared to or group, genital organ weight in haloperidol group is considerable lower at 28<sup>th</sup> day. Findings suggested that haloperidol can have negative impact on male genital system & this may be due to disruption endocrine function. significantly increased body reproductive organ weight in male albino rats

**In vivo-sperm count:**

Sperm count is key marker semen quality that reveals a male reproductive status. In this sperm cell count is performed to assess impact fenugreek seed on male reproductive status.

After 28 day sperm count in haloperidol treated group drastically decrease. ( $\downarrow$ 3.38%). Increase in sperm count after 28 days 450mg/kg ( $\uparrow$  76.69%) ( $p < 0.0001$ ). spermatozoa survival is greatly influenced by steroidal diosgenin fenugreek seed it is contribute to increase amount semen.

#### **A) Biochemical studies: Estimation serum cholesterol.**

##### **Estimation serum testosterone.**

Cholesterol is a prerequisite substrate in numerous physiologically steroids, including bile acids, steroid hormone vitamin D. As per literature review haloperidol's principle action may be direct antagonist impact on dopamine D2 receptor, with some indirect effects being mediated via increased prolactin levels. re is strong evidence that higher level prolactin inhibits sexual function at all level. An increase in plasma prolactin also results in a decrease in testosterone which is hypothesized to have an impact on sexual function sildenafil was reported to increase testosterone level testosterone – is principle Male hormone & it is synthesized by leydig cells from cholesterol. Control group showed decrement testosterone increase cholesterol level which indicates low, haloperidol intention with testosterone production. testosterone increases in standard group, study finding are in accordance with finding

reported by Azza badry. treated group Haloperidol + & alone also showed increase in testosterone level, phytoconstituent saponin, alkaloids, flavonoids, steroids, carbohydrate, protein may responsible leydig cell therefore increase testosterone level.

Among different phytoconstituents saponin are linked to aphrodisiac activity due to its androgen increasing property, saponins presence in extract probably stimulating testosterone formation by raising level LH (luteinizing hormone). Haloperidol treated control group animals showed significant reduction in sperm count. Sildenafil citrate treated group showed no significant increase in sperm count while count is high in treated group. + Haloperidol & extract alone group presence phytoconstituent like diosogenin, saponin may responsible to restore sperm count near normal.

#### **CONCLUSION:**

Findings this study indicate that, as compared to animals treated with haloperidol, animals treated with Fenugreek seed aqueous extract had enhanced orienting behaviors, hesitation time, attraction to females. Presence alkaloids, saponins, steroids, carbohydrates, proteins, fibers in fenugreek seed may be cause increase in aforementioned parameter. Additionally, fenugreek seed may have an

enhancing effect on testosterone by acting as major stimulators dopamine, a neurotransmitter that aids in conduct actions related to sexual behavior copulation. Conclusion that extract possesses aphrodisiac spermatogenic potential comes from results numerous physical methods, including body weight, sexual organ weight, sperm count, histological tests, and biochemical research. Future research can focus on isolating phytoconstituents from plant that may be source its aphrodisiac effects. In addition, by expanding our research, we can create a molecular pathway for addressing many forms sexual dysfunction.

#### **ACKNOWLEDGMENTS:**

The authors would like to thank Appasaheb Birnale College of Pharmacy, Sangli for their kind support during studies.

#### **CONFLICT OF INTEREST:**

The authors declare no competing interests.

#### **DECLARATION:**

The authors did not receive support from any organization for the submitted work.

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