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Original Research Article

Study of Fenugreek Effect on Aphrodisiac Activity in Diabetes Induced Rat

RB. Gupta*[1], A. Ahuja[2], MP. Kabra[1], S. Soni[1]
[1]*Kota College of Pharmacy, Kota (Raj.), India*
[2]*Rajasthan Pharmacy College, Jaipur (Raj.), India*

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ABSTRACT

Objective: A Fenugreek (*Trigonella foenum graecum* L.), an annual legume, we examined the effect of above plants extract upon the expression of male rat sexual behavior, in order to evaluate the possibility that these plant extract might possess aphrodisiac property in diabetic rat. Methods: The sexually active male separately and divided into 5 groups; each group consisting of 6 animals. The animals in the divided groups received the treatment orally. Different groups of animals which received the plant extract and the control are as follows; Group I (Control, non diabetic): Normal animals treated (2ml/kg, *p.o.)* of saline, Group II (Control diabetic): Diabetes animals treated (2ml/kg, *p.o*.) of saline, Group III (Standard drug): Diabetic Animals treated with Sildenafil citrate at a dose 4 mg/kg, Group IV: Diabetic Animals treated with at aqueous extract of *Tregonella foenum graecus* of dose 0.87g/kg, *p.o*, Group V: Diabetic Animals treated with at aqueous extract of *Tregonella foenum graecus* of dose 1.74 g/kg, *p.o.* Results: Administration of fenugreek extract of dose 0.87g/kg, *p.o.* and 1.74 g/kg, *p.o.* decrease in Mount latency and intermission latency and increase Mount frequency, Intromission frequency, Ejaculating frequency as compared with control in diabetes induced rat. Conclusion: Aqueous extract of *Trigonella foenum graecum* L improved sexual performance in diabetic rat.

1. Introduction

Fenugreek (*Trigonella foenum graecum* L.), an annual legume, is extensively cultivated in most regions of the world for its medicinal value. Fenugreek leaves and seeds are consumed in different countries around the world for different purposes such as medicinal uses are anti-diabetic, lowering blood sugar and cholesterol level, anti-cancer, anti-microbial, etc. making food (stew with rice in Iran, flavor cheese in Switzerland, syrup and bitter run in Germany, mixed seed powder with flour for making flat bread in Egypt, curries, dyes, young seedlings eaten as a vegetable, etc.), roasted grain as coffee-substitute (in Africa), controlling insects in grain storages, perfume industries etc.

Nowadays, fenugreek is widely cultivated as a drug plant. The mucilaginous seeds are reputed to have many medicinal virtues, as a tonic, emollient, carminative, demulcent, diuretic, astringent emmenagogue, expectorant, restorative, aphrodisiac and vermifugal properties and were used to cure mouth ulcers, chapped lips and stomach irritation Duke. In Iranian traditional medicine the seeds are used as tonic and blood sugar lowering. The biological and pharmacological actions of fenugreek are attributed to the variety of its constituents, namely: steroids, polyphenolic substances, volatile constituents, amino acids, etc**[1]**.

Fenugreek seed contains 45-60% carbohydrates, mainly mucilaginous fiber (galactomannans), 20-30% proteins high in lysine and tryptophan, 5 - 10% fixed oils (lipids), pyridine, alkaloids, mainly trigonelline (0.2 - 0.38%), choline (0.5%), gentianine and carpaine, the flavonoids apigenin, luteolin, orientin, quercetin, vitexin and isovitexin, free amino acids, such as 4-hydroxyisoleucine (0.09%), arginine, histidine and lysine, calcium and iron, saponins (0.6 - 1.7%), glycosides yielding steroidal sapogenins on hydrolysis (diosgenin, yamogenin, tigogenin, neotigogenin), cholesterol and sitosterol, vitamins A, B1, C and nicotinic acid and 0.015% volatile oils (n-alkanes and sesquiterpenes)**[1]**.

We previously reported that 20% of men with type 1 diabetes had a history of erectile dysfunction and that frequency of this condition was related to age, duration of diabetes presence of severe diabetic retinopathy. The fenugreek seed possess antidiabetic effect**[2]**. So we will study aphrodisiac potential of fenugreek in diabetic rats.

There are numerous reports of aphrodisiac activity attributed to above plants have been reputedly used as a traditional Indian medicine for treating both impotence and ED.

These claims are based largely on subjective opinion rather than scientific observation. In the present study, we examined the effect of above plants extract upon the expression of male rat sexual behavior, in order to evaluate the possibility that these plant extract might possess aphrodisiac property.

2. Experimental

2.1Animals

***Corresponding author: R.B. Gupta**, Kota College of Pharmacy, Kota (Raj.), India

Healthy adult albino rats of wistar strain, weighing about 150-200 g were obtained from the Arya college Animal house, Jaipur. The rats of either sex were isolated and housed in separate cages during the course of experimental period and kept them at room temperature (24±2°C) with a 12 h: 12 h light / dark cycle. The animals were fed with standard pellet diet and provided water *ad libitum.* All the procedures in this study were performed in accordance with the NIH guidelines for the care and use of laboratory animals, after getting the approval from the Arya College Animal Ethics Committee. (Approval No.1013/PO/c/06/CPCSEA)

2.2Preparation of male rats

The male rats were trained, for sexual behavior, two times a day for a period of minimum of 10 days. The male rat which did not show any sexual interest during the test period was considered as an inactive male. The sexually active male rats were selected for testing aphrodisiac activity of the extracts.

2.3 Preparation of female rats

Female rats were housed in separate cages with food and water *ad libitum*. The female rats were brought in oestrous phase by treating them with estradiol valerate (10 µg/kg S.C. and hydroxy progesterone 1.5mg/kg S.C., for 48 hours and 5 hours prior to experimentation, respectively, to make them sexually acceptable and were selected for the study.

2.4 Experimental details

The sexually active male separately and divided into five groups; each group consisting of 6 animals. The animals in the divided groups received the treatment orally. Different groups of animals which received the plant extract and the control are as follows:

2.5 Collection and Authentication of Fenugreek Seed

The seeds of *Trigonella foenum graecum* (Fenugreek) was purchased from Local market of Kota, Rajasthan in the month of March 2012 and were authenticated by Mr. Vinod Meena , Scientist at department of botany, Botanical Survey of India, Jodhpur and herbarium was deposited with voucher specimen No.: BSI/AZRC/I12012/TECH/2011-12/693.

2.6 Preparation of Aqueous extract of *Trigonella foenum graecum* seed

Trigonella foenum-graecum (Fenugreek) seeds 500 g were powdered and boiled in 5000 ml distilled water for 30 mins. Then, the decoction was cooled for 30 mins at room temperature. Next, the cooled decoction was filtered through a coarse sieve twice. Finally, the filtrate was concentrated by flash evaporation at 358 ℃ to a thick paste (totally 80g**)[1].**

2.7 Route and Dose of administration

The *Tregonella foenum graecus* was administered per orally (p.o.) using oral feeding needle in a volume of 5 ml/kg and Estradiol valerate 10 µg/kg S.C. and Hydroxy progesterone 1.5mg/kg S.C. injection**[3]**.

2.8 Aphrodisiac activity

Erectile dysfunction occurs in at least 50% of men with diabetes mellitus[4]. The onset of impotence occurs at an earlier age in those with diabetes mellitus. In more than 50% of patients with impotence and diabetes, the impotence is noted within ten years of the onset of diabetes; it may present as the first sign of diabetes in 12% of patients. Temporary impotence may be due to poorly controlled diabetes, although this point is debatable. Impotence occurs at an earlier age in type I insulin-dependent diabetic patients than in type II non-insulin-dependent diabetic patients, although impotence probably occurs with equal frequency in the two typed.

In this model, diabetes was induced in the rats using alloxan. Alloxan produces hyperglycemia by selective cytotoxic effect on pancreatic β-cells and one of the intracellular phenomenon's for its cytotoxicity is through generation of free radicals, which has been demonstrated both in vivo and in vitro. Free radicals and associated reactive species have been implicated in diabetes and its complications**[5].**

So in this study we will observe effect of high blood sugar (diabetes) on various parameter of aphrodisiac study. Then effect of *Tregonella foenum graecus* extract on these parameter.

It is proved that *Trigonella foenum-graecum* extract can lower blood glucose, blood lipid levels and improve hem rheological properties in experimental diabetic rats following repeated treatment for 6 weeks. So now we will study *Trigonella foenum-graecum* in induced diabetic model.

To induced diabetes mellitus (Type-II) in wistar rat: Wistar rats of male sex (180- 220g) were used for this study. The rats were injected with alloxan monohydrate (120 mg/kg, i.p.) After 6 hrs of alloxan administration animals were treated with 20% D-glucose (2 ml/kg, i.p.) and continued with 5% D-glucose for 24 hr in drinking water.

After 72 hr serum glucose levels were measured and animals with serum glucose level above 150-200 mg/dl were selected for further study**[6]**.

Male albino rats were distributed into 5 groups consisting of six rats per group

Group I (Control, non diabetic): Normal animals treated (2ml/kg, *p.o.)* of saline

Group II (Control diabetic): Diabetes animals treated (2ml/kg, *p.o*.) of saline

Group III (Standard drug): Diabetic Animals treated with Sildenafil citrate at a dose 4 mg/kg,

Group IV: Diabetic Animals treated with at aqueous extract of *Tregonella foenum graecus* of dose 0.87g/kg, *p.o.*
Group V: Diabetic Animals treated with at aqueous extract of *Tregonella foenum graecus* of dose 1.74 g/kg, *p.o.*

From 2 weeks prior to the screening tests, until the end of the study, the rats were housed individually at 24 °C-26 °C reverse day night cycle. The highly receptive female was introduced into the male's cage and each male rat is observed for 30 minutes for copulatory behavior under dim red light. All the rats were tested for copulatory behavior on 0, 7^{th}, 14^{th}, 21^{th}, 28^{th}, 35^{rd} and 42^{th} days respectively.

2.9 Sexual Behavior Study

The sexual behavior of the experimental rats was observed in a dim light at 10 a.m. in a specially designed cage that has glasses and wood. The male experimental rat was first placed in the cage and then one female rat in estrous phase was introduced. An initial period of 10 minutes was considered as acclimatization period. After 10 minutes activity of male rat in each group was recorded individually for 30 minutes.

In the aphrodisiac activity of the extracts, several parameters were observed. These include measuring and observing the Attraction towards female, mount frequency, mount latency, intromission frequency, intromission latency, and Ejaculation frequency.

The following parameters of the copulatory behavior were recorded

3.1 Attraction towards female and determination of Hesitation time

(I). *Attraction towards female & Determination of Hesitation time*

Determination of attraction towards sexually receptive female was done using the methods. A female rat was placed in a cage which had a wooden barrier of 15 cm separating male & female compartments which could be passed by a motivated male rat.

The hesitation time was recorded as the time (in sec) required by the male rat before making an attempt to cross the barrier. In the same way, a scoring for attraction towards female was recorded by a score between 0-5 during an observation period of 15 min. A complete cross of the partition by the male rat each time was given a score of 5 while an attempt to climb was given a score of 2 & disinterest to climb was rated as 0. The readings were recorded on Days 1, 7 & 14 of treatment. This test is useful in determining the willingness of a male rat to cross an aversive or obstructive position, thus indicating the intent of sexual attraction. Male rats of all the groups were subjected to experimentation and their scores for attraction as well as hesitation time were recorded[7].
(II) Mount latency (ML)**:** Time taken for the first mount following the introduction of females.
(III) Intromission latency (IL)**:** Time taken for first intromission following introduction of the female.
(IV) Mount frequency (MF)**:** No. of mounts observed in 30 min;
(V) Intromission frequency (IF)**:** No. of intromission observed in 30 min;
(VI) Ejaculation frequency (EF): No of ejaculation observed in 30 min

2.10 Statistical Analysis

All the results were expressed as Mean ± Standard Error (SEM). Interpretation of the result was supported by statistical analysis. Results of the same group of different days of treatment were analyzed by one way analysis of variance (ANOVA) followed by Dunnett's test to calculate the level of significance. Statistical analysis of data was performed using Graph Pad Prism demo version 6.

3. Results

Table 3.1: Hesitation Time of *Tregonella foenum graecus* treated rats

Groups	day0	day 7	day 14	day 21
Normal	1.83 ± 0.7491	2.66 ± 0.8028	1.833 ± 0.7491	2.33 ± 0.9189
Control(d)	1.33 ± 0.4216	1.66 ± 0.3333#	1.33 ± 0.4216	1 ± 0.4472##
Sildenafil citrate	2.167 ± 0.654	4.5 ± 0.5**	4.667 ±0.3333**	4.5 ± 0.3416**
Fenugreek(0.87g)	2 ± 0.4472	2.5 ± 0.3416*	3.167 ± 0.4014*	3.333 ± 0.3333*
Fenugreek(1.74g)	2 ± 0.4472	2.667 ±0.4944*	3.833±0.5426**	4.333±0.4216**

The values are expressed as mean ± SEM (n=6); $^{*}p<0.05$, $^{**}p<0.01$ *vs* Sildenafil citrate group (One way ANOVA followed by Dunnett's test). Sildenafil citrate group *vs* control group (Students't' test).

Administration of alloxan (120 mg/kg, i.p.) showed significant (P<0.05 and P<0.01) increase in hesitation time on 7 and 21 day of observational period respectively as compared to the normal group. Administration of (Sildenafil citrate 4 mg/kg p.o.) showed significant (P<0.01) decrease in hesitation Time on 7,14,21 day of observational period respectively as compared with control. Administration of Fenugreek (0.87mg/kg) showed significant (p<0.05) decrease in hesitation Time on 7,14,21 day of observational period respectively as compared with control. Fenugreek (1.74 mg/kg) showed significant (p<0.05 and p<0.01) decrease in hesitation Time on 7 day and 14,21 day of observational period respectively as compared with control.

3.2 Mount latency (ML)

Table 3.2: Mount Latency of *Tregonella foenum graecus* treated rats

Groups	day0	day 14	day28	day42
Normal	236.5 ± 25.35	255.3 ± 25.85	231.5 ± 26.05	255 ± 35.56
Control(d)	506.8 ± 34.05##	398.3 ± 20.59##	443 ± 36.69##	476.8 ± 58.24##
Sildenafil citrate	227.2 ± 11.76*	171.3 ± 22.31*	153.5 ± 11.07**	133 ± 14.28***
Fenugreek(0.87g)	286.7 ± 12.38	190.2 ± 11.0517*	176.3 ± 12.02*	157.3 ± 10.14**
Fenugreek(1.74g)	267.5 ± 11.77	184.3 ± 7.969*	178.2 ± 11.53*	164.3 ± 12.17**

The values are expressed as mean ± SEM (n=6); *p<0.05, ** p<0.01 *vs* Sildenafil citrate group (One way ANOVA followed by Dunnett's test). Sildenafil citrate group *vs* control group (Students't' test).

Administration of alloxan (120 mg/kg, i.p.) showed significant (P<0.01) increase in mount latency on 0, 14,28 and 42 day of observational period respectively as compared to the normal group.

Administration of (Sildenafil citrate 4 mg/kg p.o.) showed significant (p<0.05, P<0.01and P<0.001) decrease in mount latency on 0,14 and 28 and 42 day of observational period respectively as compared with control. Administration of Fenugreek (0.87mg/kg) showed significant (p<0.05and p<0.01) decrease in mount latency on 14,28 day and 42 day of observational period respectively as compared with control. Fenugreek (1.74 mg/kg) showed significant (p<0.05 and p<0.01) decrease in mount latency on 14,28 day and 42 day of observational period respectively as compared with control.

3.3 Intromission Latency (IL)

Table 3.3: Intromission Latency (IL) of *Tregonella foenum graecus* treated rats

Groups	day0	day 7	day 14	day 21	day28	day 35	day 42
Normal	24.8 ± 0.5426	21.83 ± 1.249	17.17 ± 1.1276	16.67 ± 1.116	16.83 ± 1.579	17.83 ± 1.922	19.17 ± 2.833
Control(d)	23.5 ± 0.9916	25.16 ± 1.352	24.16 ± 1.046#	23.16 ± 1.641#	25.33 ± 1.085#	24 ± 0.9309#	25 ± 2.769#
Sildenafil citrate	20 ± 1.461	12.5 ± 1.335**	8.667 ± 0.9189**	7.667 ± 0.7149**	7.333 ± 0.7601**	5.333 ± 0.2108***	4.833 ± 0.5426***
Fenugreek(0.87g)	21.67 ± 1.282	14.67 ± 0.9545*	11 ± 0.8165**	11.33 ± 0.4216**	10.5 ± 0.7638**	10 ± 1.065**	9.333 ± 1.145**
Fenugreek(1.74g)	18.67 ± 1.282	12 ± 1.789**	11 ± 0.8165**	9.833 ± 0.654**	9 ± 0.6325**	7.833 ± 0.4773**	7.833 ± 0.4773**

The values are expressed as mean ± SEM (n=6); *p<0.05, ** p<0.01 *vs* Sildenafil citrate group (One way ANOVA followed by Dunnett's test). Sildenafil citrate group *vs* control group (Students't' test).

Administration of alloxan (120 mg/kg, i.p.) showed significant (P<0.05) increase in intermission latency on 14,21,28, 35and 42 day of observational period respectively as compared to the normal group. Sildenafil Citrate 4 mg/kg p.o. showed significant (P<0.01and P<0.001) decrease in interrmission latency on 7,14,21,28 and 35,42 day of observational period respectively as compared with control. Administration of Fenugreek (0.87mg/kg) showed significant (p<0.05and p<0.01) decrease in intermission latency on 7 day and 14, 21, 28, 35, 42 day of observational period respectively as compared with control. Fenugreek (1.74 mg/kg) showed significant (p<0.01) decrease in intermission latency on 7,14,21,28,35,42 day of observational period respectively as compared with control.

3.4 Mount Frequency (MF)

Table 3.4: Mount Frequency (MF) of *Tregonella foenum graecus* treated rats

Groups	day0	day 7	day 14	day 21	day28	day 35	day 42
Normal	6.833 ± 0.4773	7 ± 0.5164	6.667 ± 0.6667	9 ± 1.033	6.833 ± 0.8724	7.667 ± 0.6146	7 ± 0.5774
Control	5.833 ± 0.6009	6.167 ± 0.5426	4.5 ± 0.6708#	5.167 ± 0.7923##	5.5 ± 0.5627	6.167 ± 0.7923	5.5 ± 0.6191#
Sildenafil citrate	7 ± 0.5774	25.17 ± 1.579**	26.83 ± 1.515**	28.33 ± 2.305**	30.33 ± 1.764***	30.83 ± 2.738***	33 ± 1.592***
Fenugreek (0.87g)	8.4 ± 0.4282	13.17 ± 0.4773*	16.67 ± 0.5578*	18 ± 0.7746*	21.83 ± 1.138**	27 ± 0.8563**	26.17 ± 0.9458**
Fenugreek (1.74g)	6.5 ± 0.4282	15.5 ± 1.727*	18.83 ± 0.6009*	21 ± 0.8563**	21.83 ± 1.138**	22.5 ± 2.742**	23.5 ± 1.875**

The values are expressed as mean ± SEM (n=6); *p<0.05, ** p<0.01 *vs* Sildenafil citrate group (One way ANOVA followed by Dunnett's test). Sildenafil citrate group *vs* control group (Students't' test).

Administration of alloxan (120 mg/kg, i.p.) showed significant (P<0.05and P<0.01) decrease in mount frequency on 14, 42 and 21 day of observational period respectively as compared to the normal group. Administration of (Sildenafil citrate 4 mg/kg p.o.) showed significant (P<0.01 and P<0.001) increase in mount frequency on 7, 14, 21 and 28, 35, 42 day of observational period respectively as compared with control. Administration of Fenugreek (0.87mg/kg) showed significant (p<0.05and p<0.01) increase in mount frequency on 7, 14, 21

and 28, 35, 42 day of observational period as compared with control. Fenugreek (1.74mg/kg) showed significant (p<0.05and p<0.01) increase in mount frequency on 7, 14 and 21,28,35,42 day of observational period as compared with control.

3.5 Intromission Frequency

Table 3.5 Intromission Frequency of *Tregonella foenum graecus* treated rats

Groups	day0	day 7	day 14	day 21	day28	day 35
Normal	1.83 ± 0.4014	2.5 ± 0.2236	2.3 ± 0.3333	2.5 ± 0.3416	2.5 ± 0.4282	2.83 ± 0.3073
control(d)	1.16 ± 0.1667	1.5 ± 0.3416#	1.33 ± 0.2108#	1 ± 0.2582#	0.83 ± 0.3073##	0.83 ±0.1667##
Sildenafil citrate	1.66 ± 0.2108	5.1 ± 0.7032**	7.83 ±0.4014***	7.6 ± 0.7149***	7.3 ± 0.7601***	7 ± 0.5774***
Fenugreek (0.87g)	1.66 ± 0.3333	4.16 ± 0.4014*	5.16 ± 0.4773**	5.83 ± 0.1667**	5.1 ± 0.6009**	6.33 ± 0.9545**
Fenugreek (1.74g)	2 ± 0.4472	4.16 ± 0.9804*	4.33 ± 0.2108*	5.66 ± 0.4216**	4.66 ± 0.4944*	5.33 ± 0.6146**

The values are expressed as mean ± SEM (n=6); *p<0.05, ** p<0.01 *vs* Sildenafil citrate group (One way ANOVA followed by Dunnett's test). Sildenafil citrate group *vs* control group (Students't' test).

Administration of alloxan (120 mg/kg, i.p.) showed significant (P<0.05and P<0.01) decrease in intermission frequency on 7,14,21 and 28, 35 day of observational period respectively as compared to the normal group. Administration of (Sildenafil citrate 4 mg/kg p.o.) showed significant (P<0.01 and P<0.001) increase in intromission frequency on 7 and 14,21,28,35 day of observational period respectively as compared with control. Administration of Fenugreek (0.87mg/kg) showed significant (p<0.05and p<0.01) increase in intromission frequency on 7 and 14,21,28,35, day of observational period as compared with control. Fenugreek (1.74bmg/kg) showed significant (p<0.05and p<0.01) increase in intromission frequency on 7,14,28 and 21,35 day of observational period as compared with control.

3.6 Ejaculation Frequency

Table 3.6 Ejaculation Frequency of *Tregonella foenum graecus* treated rats

Groups	day7	day 14	day 21	day 28	day35	day 42
Normal	1.5 ± 0.5	1 ± 0.3651	1.5 ± 0.3416	1.167 ± 0.4014	1.1667 ± 0.5578	1.167 ± 0.5426
control (d)	0.6667 ±0.2108#	1 ± 0.2582	0.5 ± 0.2236#	0.5 ± 0.2236#	0.6667 ± 0.2108#	0.5 ± 0.2236##
Sildenafil citrate	3 ± 0.2582**	3.167 ± 0.4014**	3.833 ± 0.3073**	4.167 ± 0.3073***	4 ± 0.3651***	4.5 ± 0.5627***
Fenugreek (0.87g)	2.167 ± 0.3070	2.333 ± 0.5578	3 ± 0.3651**	3.5 ± 0.2236**	3.5 ± 0.4282**	3.667 ± 0.3333**
Fenugreek (1.74g)	2 ± 0.4472	2.167 ± 0.3073	3 ± 0.3651**	3.833 ± 0.3073**	3.667 ± 0.3333**	3.833 ± 0.1667**

The values are expressed as mean ± SEM (n=6); *p<0.05, ** p<0.01 *vs* Sildenafil citrate group (One way ANOVA followed by Dunnett's test). Sildenafil citrate group *vs* control group (Students't' test).

Administration of alloxan (120 mg/kg, i.p.) showed significant (P<0.05 and P<0.01) decrease in ejaculatory frequency on 7,21,28,35day and 42day of observational period respectively as compared to the normal group. Administration of (Sildenafil citrate 4 mg/kg p.o.) showed significant (P<0.01 and P<0.001) increase in ejaculation frequency on 7,14,21 and 28,35,42 day of observational period respectively as compared with control. Administration of Fenugreek (0.87mg/kg) showed significant (p<0.01) increase in ejaculation frequency on 21,28,35,42 day of observational period as compared with control. Fenugreek (1.74bmg/kg) showed significant (p<0.01) increase in ejaculation frequency on 21,28,35,42 day of observational period as compared with control.

4. Discussion

To get an erection, men need healthy blood vessels, nerves, male hormones, and a desire to be sexually stimulated. Diabetes can damage the blood vessels and nerves that control erection. Therefore, even if any have normal amounts of male hormones and he have the desire to have sex he still may not be able to achieve a firm erection.

Trigonella foenum graecum are high in soluble fibre, which helps lower blood sugar by slowing down digestion and absorption of carbohydrates. This suggests they may be effective in treating people with diabetes. Multiple studies have been carried out to investigate the potential anti-diabetic benefits of fenugreek.

Of these, several clinical trials showed that fenugreek seeds can improve most metabolic symptoms associated with both type-1 and type-2 diabetes in humans by lowering blood glucose levels and improving glucose tolerance . In one study, researchers in India found that adding 100 grams of defatted fenugreek seed powder to the daily diet of patients with insulin-dependent (type 1) diabetes significantly reduced their fasting blood glucose levels, improved glucose tolerance and also lowered total cholesterol, LDL or 'bad' cholesterol and triglycerides. So it found beneficial I effect on animal treated with alloxan, diabetic rats for aphrodisiac study.

The effect of fenugreek seed on the sexual behavior of male albino rats sildenafil citrate was used as the standard drug of reference. The significant increase in the indices of sexual vigor that is mount and intromission frequencies, and the significant

decrease in mount latency and intermission latency compared to the negative control are indications of the aphrodisiac potential of Tregonella foenum graecus extract from seeds. Also, other parameters such as attraction towards female and hesitation time were observed when the extract was administered indicating a direct effect of the extract on libido or sexual drive.

The mount and intromission frequencies are considered as the indices of both libido and potency**[9]**. The standard drug was found to produce significant reduction in mount latency (ML) as compared to the fenugreek extract, while a highly significant increase was found in mount and intromission frequencies vis-a-vis the standard drug (sildenafil citrate). Among the phytochemicals identified, saponins showed the highest concentration of 12%. Studies have linked the saponin component of plants in enhancing aphrodisiac properties due to its androgen increasing property. Saponins present in the extract of this plant might have assisted in stimulating an increase in the body natural endrogenous testosterone levels by raising the level of leutinizing hormones (LH). This LH released normally by the pituitary gland helps to maintain testosterone levels; as LH increases, so does the testosterone**[10]**.The increase in testosterone seemed to have translated into the male sexual competence observed in this study. Furthermore, phytochemical analysis revealed steroids. Thus, the resultant aphrodisiac effectiveness of the aqueous extract might also be attributed to steroids.

Results of this study revealed that the seed of Tregonella foenum graecus increased the sexual libido and potency of male albino rats, and have provided scientific evidence to support the acclaimed role of the plant's seed as an aphrodisiac in traditional medicine.

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