2015 6th International Conference on Environmental Science and Technology
Volume 84 of IPCBEE (2015)
DOI: 10.7763/IPCBEE. 2015. V84. 19

Evaluation of Aphrodisiac Efficacy of Quail Egg Shell Concoction in Albino Rat

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Abstract. The Hausa ethno medicinal practice involves the use of *moringao leifera* and other components like shells to treat various disease conditions including sexual dysfunction. The widely spread claims of the aphrodisiac activity of quell eggshell is evaluated in accordance with the criteria laid down by Lawler 1984 by monitoring the mounting behaviour among the experimental groups of albino rats after administering different feeds at different concentration to the group. The result reveals *Moringa oleiferra* as the most effective with 28 and 55 percentages for 50mg/kg and 100mg/kg respectively as individual percentage and about 13% and 26% for overall. Concoction had 15 and 51 % as individual and 5 and16 as overall with the quail egg shell alone giving only 20 and 25 percent as individual percentage with (4 and 5)% as overall. The analysis of variance (ANOVA) run reveals the highest concentration of 100mg/kg to be more effective with a mean difference of 11.683 against 100mg & 6.900 against 50mg/kg at a standard error of about 0.7745 each. The significant difference for the sample feeds indicate that the error term is square (error) = 1.799. The mean difference is significant at 0 .05 level (i.e. p=0.05).

Keywords: Quell egg shell, moringa oleiferra, sildenafil, aphrodisiac.

1. Introduction

With the modern diet and the increased work pressure imposed on individuals, the inner urge for sex assumes an important place in life. Sex is the best stress buster in the world. The basic and fundamental purpose of sex and sexuality is the "continuation of progeny" and the survival of human race. However, unfortunately, there has been a lot of ignorance, wrong information, fear and negative attitude as far as sex is concerned. Sexual myths results in sexual dysfunctions, misery, silent suffering, disturbed interpersonal relationships and even divorce [1]. Erectile dysfunction has been identified as the persistent inability to attain and maintain penile erection sufficient for satisfactory sexual performance. Epidemiological studies have demonstrated a high prevalence of ED in developed countries, and therefore it is considered as an important health problem. On account of the above, a number of plants (like *A. racemosus, C. borivilianum, D. hatagirea, C. orchiodies, O. latifolia)* have been traditionally employed among different cultures worldwide in order to improve sexual performances. The roots of *asparagus racemosus*, *Chlorophytum borivilianum*, and rhizomes of *Curculigo orchioides* are popular for their Aphrodisiac and Immunostimulatory propertie [2]. In a recent time some Hausa people claim quail egg shell as best aphrodisiac when mixed with *Moringa oleifera.* Moringa has been the subject of some scientific study. Some modern anecdotal account exists as to the efficacy of Moringa as an aphrodisiac [3]. Quail eggs as reported by the farmers voice Health 19 Mar, 2009 stimulate growth, rejuvenate the body, improves intelligence quotient (IQ), increases sexual appetite, combats stress, heart aches, obesity and asthma, different forms of allergies, hypertension, liver and kidney diseases among others. The beneficial effects are as a result of its superior protein quality; it contains no

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cholesterol, and has a high concentration of vitamins and minerals. As an enriched source of phosphorous, proteins, and Vitamins (B, D, E), it stimulates and nourishes the prostate gland which is vital to a man's sexual health. However, no pharmacological studies have been published that in any way would substantiate the alleged aphrodisiac effects of the shell.

1.1. Mechanism involved in Aphrodisiac potentials

On sexual stimulation (visual (or) otherwise the famines of the axons of parasympathetic nerves release nitric oxide (NO) gas. The gas diffuses into smooth muscle cells that line those arteries of the corpus carvenosum (spongy erectile tissue) and activates the enzyme guanylate cyclase (GC). The later converts the nucleotide guanosine triphosphate (GTP) into cyclic guanosine monophosphate (cGMP). The cGMP in turn causes the smooth muscle cells around the penis to relax, leading to dilation and increased flux of blood into the penile tissue. The erection ceases after a while because cGMP is hydrolyzed by phosphodiesterase type-5 enzyme (PDE-5) into inactive GMP. (The PDE-5 enzyme resides in the penile tissues). Aphrodisiac potentials inhibit the hydrolyzing action of PDE-5 with the result that active cGMP can accumulate. 'Undisturbed' and prolong the erection through increased blood flow [4].

1.2. Significance of the Research

The use of synthetic aphrodisiacs results in the dilation of blood vessels in other parts of the body, causing headache and fainting making their usage increasingly applied with great health concern. Other side effects of synthetic aphrodisiac include facial flushing, stomach upset, blurred vision and sensitivity to light which usually occur at higher doses [1]. Thus, there is growing need to look for aphrodisiacs more of natural plant or herbal origin as opposed to synthetic compounds, which are known to cause severe unwanted side effects. This research is aimed at carrying out investigation on the quail eggshell in concoction with *Moringa oleifera* to prove, or otherwise the widespread claims on its influence in better sexual performance with the objective of providing a better alternative that is safer and more health friendly.

2. Materials and Methods

2.1. Sample Preparation

The moringa leaves were dried in a shade and then crushed into a fine powder (taking exactly 0.15g) and suspended in a solution (5ml H_2O)to give 5ml of 50mg/ kg and made available for the application. The quail egg shells were initially dried, crushed into moderately coarse powder, (taking 0.15mg) and suspended in a solution of 5ml H_2O and made available for administration. Sildenafil pills were crushed into a fine powder and suspended in a solution (H_2O) for administration. Equal volume of moringa and that of egg shell were mixed together, taking the same measurement each from and kept for the application.

2.2. Treatment

An orally administration technique was adopted and a dose of 50 mg/Kg as well as100 mg/Kg was given; the five male rats were randomized into 4 groups comprising 3 animals each, (1 male and 2 female). The females were differentiated from one another by shading part of the body with an ink marker as A & B for easy monitoring. The male animals were treated with respective samples and the results evaluated.

2.3. Grouping of Animals

Healthy white albino rats (*Rattis Novergicis*) of either sex weighing 270g-300g, aged5.0 - 5.5 months, for male and 150g-180g, aged3.5 - 4.0 months for female were used for the study. The animals were housed under standard laboratory conditions (relative humidity 65 ± 2%, temperature 23 ± 2 ℃ and 12 h light: dark cycle). They were fed with standard rodent pellet diet and tap water. The animals were grouped into five each serving as a treatment as follows:

Group I served as control and received 10ml of water.; Group II received quail egg shell 50 mg/Kg (p.o). Group III received Moringa oleifera 50 mg/Kg (p.o). ; Group IV was administered with egg shell concoction 50 mg/Kg (p.o). Group V was given 10 mg/Kg of standard (sildenafil).

2.4. Mounting Behaviour Test

For the quantification of mounting behaviour, non-oestrous female rat was paired with male treated with a single dose of the drugs with different concentration (i.e. 50mg/kg, and 100mg/kg) animals were observed for 3 hours and the behaviour was scored as described by Lawler (1984), males were placed individually in a cage [5]. After 15 minutes of acclimatization, non-oestrous female was then introduced into the arena. The numbers of mounts were recorded during 15 minutes observation period at the start of the first hour. Then the female were separated for 75 minutes. Again, female was introduced and the number of mounts was also observed for 15 minutes as before at the third hour the female was separated again for 45 minutes then reintroduced for 15 minutes for the last three hours.All the experiments were performed between 09.00 to 12.00 hrs. during day time at room temperature 26– 27^{o}C.

2.5. Observation

After the administration of the drugs the behaviour of the animals were carefully observed and recorded. Mounting behaviour, mating performance, and other sexual related activities (including any attempt of the male rat against the female), perception of female's copulatory position by the male, were all considered as the number of mount. Table 1, Table 2 and Table 3 indicate the result of observation when the Rats were fed with *Moringa Oleifera*, concoction and quell egg shell respectively.

2.6. Statistical Analysis

After collecting the experimental data, statistical analysis (ANOVA) was conducted. Means were separated using Least Significant difference (LSD) in order to find out whether there is significant difference among the two factors (sample feeds & concentration) or not and also among the three sample feeds (Table 4 & Table 5)

3. Results and Discussion

All the three test samples were found to stimulate the mounting behaviour of male rat, and do significantly increased their mating performances. However, it is observed that they affect their aphrodisiac effect with varying degree. The results were evaluated using Lawler method. Aphrodisiac activity of each test sample was compared with that of the sildenafil (standard). The tables of the results are tabulated in the appendix as I, 2, & 3 for *Moringa oleifera*, concoction, and quail egg shell respectively.

The aphrodisiac property determined was observed to perform better on the *Moringaoleifera* followed by its concoction with the quail eggshell being the last in consideration. In each case of the experimental test, the property or the efficacy was found to increase with an increase in concentration. This pattern is in agreement with Surenda *et al.* [6] who found out that a dose-dependent improvement in sexual behaviour was observed with the LAET treatment. The property was also observed to be time dependent wherein the intensity or frequency of mounting behaviour increases with time. At *50 mg/kg* concentration and the 15min time of observation, *Moringa oleifera* frequency was high (Table 1) but as the time proceeds, the frequency decreases (3rd observation). Inferentially, it can be concluded that the property showed an inverse relationship with time. The pattern remained the same even when the concentration was doubled (*100mg/kg*). Comparatively, moringa still dominated the rest as its performance of the property measured at 100 mg/kg almost triple that of 50mg/kg concentration. Concoction on its part was noticed to be the second best aphrodisiac apart from *Moringa Oleifera* and its performance measured on the tested experimental albino rats proved to be higher than that of sildenafil (standard) in almost all the cases (observations) particularly at 100mg/kg (Table 2). Unlike *Moringa oleifera*, the mode of its action was not observed to decline with time taken. Instead, the behaviour exhibits fluctuative tendencies with time.

Meanwhile, the quail egg shell alone gave the least aphrodisiac efficacy lower than the standard despite the standard's lower dose (Table 3). Its mode of action started to show a moderate performance from the beginning of the analysis, then increased with the time increment and finally felled down to a lower performance. However, despite the low efficacy of the quell egg shell, it exhibit but steady impact. Moreover, it can be hypothesized that the sustainability of quail eggshell is higher than that of the *Moringa Oleifera* & its concoction as the highest peak was observed to be after 1hr 45min. Taking reference from the analysis of variance, a significant difference was found between the two factors (i.e. sample feeds & concentrations) and also between the three samples feed (i.e. *Moringa Oleifera*, concoction, and quail egg shell). Least

significance difference (L.S.D) method was employed in finding out the significant difference among the three concentrations i.e. (10mg, 50mg/kg, and 100mg/kg). Out of the three concentrations, 100mg/kg was found to significantly affect the result with a mean difference of 11.683 against 10mg &6.900 against 50mg/kg at a standard error of about .7745 each. Based on the observed means the error term is square (error) = 1.799. *The mean difference is significant at .05 level (i.e. p=.05).*

4. Conclusion

From the experimental data obtained based on the analysis run in order to prove the fact of some Hausa people's recent widespread on quail egg shell concoction's efficacy on aphrodisiac property. The analysis has reached to a conclusion that, the concoction is really an aphrodisiac, despite the fact that the quail eggshell alone felt to give a comprehensive positive result, but when mixed with the *Moringa Oleifera* as concoction, it helps to motivate its aphrodisiac property and thereby speed its action in the body. Therefore having discovered the significance differences among the sample feeds, it is concluded that, the aphrodisiac property of the shell is very negligible to be considered and to expect it to positively work in the body. So the property can be explained in order of priority as *Moringa Oleifera's*significance *or effect* > concoction > quail egg shell, and the ***mean difference is only significance at .05 level***. More over the significant difference among the three concentrations can be explained as 100mg/kg is more significant than 50mg/kg than 10ml.

Table 1: Effect of *Moringa oleifera* on mounting behaviour of male albino rat at different dose

50 mg/kg dose Of Moringa oleifera				100 mg/kg dose Of Moringa oleifera				sildenafil 10 mg/kg (Standard)				Water 10 ml (Control)			
	1st mount 15	2nd mount 75	3rd mount 45		1st mount 15	2nd mount 75	3rd mount 45		1st mount 15	2nd mount 75	3rd mount 45		1st mount 15	2nd mount 75	3rd mount 45
F1	15	11	12	F1	43	12	10	F1	08	06	07	F1	01	01	01
F2	10	08	08	F2	32	17	12	F2	06	03	06	F2	03	01	02
M	12.5	9.5	10	M	37.5	14.5	11	M	07	4.5	6.5	M	02	01	1.5
T	25	19	20	T	75	29	22	T	14	09	09	T	04	02	03
OV. M	10.6				21.0				5.30				1.50		
CM.%	28%				55%				14%				4.0%		
OV. %	13%				26%				7.0%				2.0%		

Table 2: Effect of Moringa concoctions on mounting behaviour of male albino rat at different dose

50 mg/kg dose Of Concoction				100 mg/kg dose Of Concoction				sildenafil 10 mg/kg (Standard)				Water 10 ml (Control)			
	`	2nd mount 75 min.	3rd mount 45 min.		1st mount 15 min.	2nd mount 75 min.	3rd mount 45 min.		1st mount 15 min.	2nd mount 75 min.	3rd mount 45 min.		1st mount 15 min.	2nd mount 75 min.	3rd mount 45 min.
F1	07	02	05	F1	18	22	05	F1	09	07	08	F1	01	01	02
F2	05	01	04	F2	17	14	04	F2	10	06	06	F2	02	01	00
M	06	1.5	4.5	M	17.5	18	4.5	M	9.5	6.5	07	M	1.5	02	02
T	12	03	09	T	35	36	09	T	19	13	14	T	03	02	02
OV. M	04.0				13.3				7.66				1.16		
CM.%	15%				51%				29%				4.0%		
OV. %	5.0%				16%				9.0%				1.0%		

Table 3: Effect of quail egg shell on mounting behavior of male albino rat at different dose

50 mg/kg dose Of Quail egg shell				100 mg/kg dose Of Quail egg shell				sildenafil 10 mg/kg (Standard)				Water 10 ml (Control)			
	1st mount 15 min.	2nd mount 75 min.	3rd mount 45 min.		1st mount 15 min.	2nd mount 75 min	3rd mount 45 min.		1st mount 15 min.	2nd mount 75 min.	3rd mount 45 min.		1st mount 15 min.	2nd mount 75 min.	3rd mount 45 min.
F1	03	04	03	F1	04	08	02	F1	07	08	08	F1	01	01	01
F2	03	05	08	F2	02	08	02	F2	04	13	10	F2	01	01	01
M	03	2.5	2.5	M	03	08	02	M	5.5	10.5	09	M	01	01	01
T	06	09	05	T	06	16	04	T	11	21	18	T	02	02	02
OV.M		3.30				4.30				8.30				1.00	
CM.%		20%				25%				49%				6.0%	
OV. %		4.0%				5.0%				10%				1.0%	

Key: F1: First female rat ; F2: Second female rat ; OV. %: Overall percentage
CM. %: Column percentage ; OV. M: Overall mean ; M: Mean ; T: Total

Multiple Comparisons

Table 4: Analysis of variance for the significant difference between three concentrations 10ml, 50mg/kg, 100mg/kg.

Scores LSD

Concentration	(J) Concentration	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
50Mg/Kg-1	100Mg/Kg-1	-6.900*	.7745	.000	-8.652	-5.148
	10Ml	4.783*	.7745	.000	3.031	6.535
100Mg/Kg-1	50Mg/Kg-1	6.900*	.7745	.000	5.148	8.652
	10Ml	11.683*	.7745	.000	9.931	13.435
10Ml	50Mg/Kg-1	-4.783*	.7745	.000	-6.535	-3.031
	100Mg/Kg-1	-11.683*	.7745	.000	-13.435	-9.931

The error term is Mean Square (Error) =1.799; The mean difference is significant at the .05 level

Table 5: Analysis of variance for the significant difference among three sample feeds

Multiple Comparisons

Scores
LSD

(I) feeds	(J) feeds	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
MoringaOlifera	Mixed	4.900*	.7745	.000	3.148	6.652
	Egg shell	8.183*	.7745	.000	6.431	9.935
Mixed	MoringaOlifera	-4.900*	.7745	.000	-6.652	-3.148
	Egg shell	3.283*	.7745	.002	1.531	5.035
Egg shell	MoringaOlifera	-8.183*	.7745	.000	-9.935	-6.431
	Mixed	-3.283*	.7745	.002	-5.035	-1.531

*The error term is Mean Square (Error) =1.799; The mean difference is significant at the .05 level

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