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Comparative Aphrodisiac Potentials of Alcohol and Aqueous Leaf Extracts of Sida *Acuta* in Improvement of Sexual Functions in Male Rats

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Abstract
Aphrodisiac is a socio-reproductive and economic term in man's life. This study aims at investigating the aphrodisiac potentials of the aqueous and ethanolic extracts of *Sida acuta* leaves on male albino rats. The extraction gave a yield of 68% and further characterization of aqueous extract showed: appearance; solution, colour; dark amber, odour; slight odour, taste; terminal bitter leaf water, and texture; slightly slippery. The chemical properties of the extract showed proximate composition as: dry matter; 92.28%, crude proteins; 16.04%, ash; 8.53%, crude fibre; 4.18% , ethanol extract; 1.57% and energy; 2760 kcal / kg. The phytochemical analysis showed that alkaloids gave 6.67 ± 0.006; flavonoids; 2.94 ± 0.06; saponins; cross check; tannins; 4.14 ± 0.06; cardiac glycosides; 5.93 ± 0.05; phlobatanins; 3.92 ± 0.06; terpenoids; 5.59 ± 0.05 and anthraquinones; cross check. The extracts were fed to acclimatized sexually mature male albino rats which had their mature females introduced to them in isolated cages where their sexual behaviours were observed using CCTV Camera. Within an hour of observing these animals, it was noticed that the number of mountings increased in the order of viagra > ethanol > aqueous. The duration of intromission and coitus increased in the order of viagra > ethanol > aqueous. The number of ejaculations however, increased; ethanol > aqueous > viagra, and the detumescence time also followed the above order. This study showed that *Sida acuta* extracts significantly ($p > 0.05$) has aphrodisiac potentials that mimic viagra, and that these potentials are dose and time- dependent.
Keywords: sex stimulant, aphrodisiac, priapism, phytochemical, proximate, ejaculation

Introduction

Plant materials have been in use to enhance sexual desire, performance and enjoyment of the act over the years by man [1, 2]. Aphrodisiacs are substances that stimulate sexual desire. Sex desire stimulants abound amongst synthetic drugs and their toxicity ratings, side effects and cost ineffectiveness have made consumers divert to using natural (plant-based) aphrodisiacs. Even in today's culture, there are certain foods that are used as aphrodisiacs, including strawberries and raw oysters. Chocolate, coffee, and honey are also believed to have aphrodisiac potentials. Although these natural items are claimed as aphrodisiacs, there is no or little scientific confirmation supporting those assertions [6-8].

Aphrodisiacs can be classified by their mode of action into three types: Those that increase libido, potency, or sexual pleasure. [9,10]. Various substances of animal and plant origin have been used in folk medicines of different cultures to energize, vitalize and improve sexual function and physical performance in men, out of these, very few have been identified pharmacologically [11,12]. For increasing libido, ambrein, a major constituent of *Ambra grisea*, is used in Arab countries. It contains a tricyclic triterpene alcohol which increases the concentration of several anterior pituitary hormones and serum testosterone. Bufo toad skin and glands contain bufotenine (and other bufadienolides), a hallucinogenic congener of serotonin. It is the active ingredient in West Indian "love stone" and the Chinese medication *chan su* [13-15] in traditional Chinese medicine, *Panax ginseng* is used as a sex stimulant. It works as an antioxidant by enhancing nitric oxide (NO) synthesis in the endothelium of corpora cavernosa (CC); ginsenosides also cause transmural nerve stimulation-activated relaxation associated with increased tissue cyclic guanosine monophosphate.[16,17]. For increasing sexual pleasure, cantharidin ("Spanish fly") from blister beetles, which have been used for millennia as a sexual stimulant [18]. Globally, *Sida acuta* is also called broom weed.It is an inter-continental medicinal plant that originated in Central America and has successfully invaded the tropics and sub-tropics globally and is of the family *Malvaceae* [19].

Researches have shown that all parts of the plant have many bioactive potentials such as diuretic, aphrodisiac,

anti-helminth, demulcent, stomachic, diaphoretic, wound healing, anti-pyretic, anti-emetic, anti-bacterial [20, 21]. It is a shrub that grows commonly in different parts of world. It is perennial in nature, surviving different seasons. It appears to be a stubborn species with a high capacity to thrive in harsh environmental conditions. It is a shrub with multiple stems and often seen growing along road side, farms and in bushes. In some parts of Nigeria, it is commonly treated as a harsh weed with no form of economic benefit. This opinion coincides with the views of who emphatically viewed tea weed or iron weed as a "weed" that has great capacity to adversely affect agricultural yield and should therefore not be allowed to grow within agricultural areas [19]

However, beyond agricultural perceptions, *Sida acuta* has found both recognition and use in healthcare dispensation in many parts of the world. Information we gathered from local sources in Nigeria shows that traditional practitioners of herbal medicine have been applying *Sida acuta* for the treatment of different illnesses such as malaria, fever, headache, infectious diseases and rheumatism, among others. Various reports from around the world have justified the usefulness and effectiveness of the weed in healthcare delivery. The wide spread of *Sida acuta,* especially within the tropical areas and its relevance in traditional management and /or treatment of various ailments have been stated by some workers. The usefulness of *Sida acuta* for the therapeutic management of disturbing conditions such as asthma, renal inflammation, colds, fever, headache, ulcers and worm infestations as stated above in regions around Central America has been reported. The potentials of *Sida acuta* for the treatment of snake bite have been reported. Research reports showed that the ethanol extract of the Sida plant was pharmacologically effective against the venom of certain snake species [22, 23]. Also, several alkaloids and steroidal compounds have been extracted from *Sida acuta,* as scientifically reported. Reports of the *anti-microbial activity* of alkaloids in *Sida acuta* against different microorganisms are also available [20, 21].

Materials and Methods

Plant Material

Sida acuta Burm. f., Malvaceae, was collected from the botanical garden of the Department of plant Science, Joseph Sarwuan Tarka University, Makurdi, Nigeria. It was identified and authenticated by Prof. H.O.A .Oluma, a Botanist in the Department.

Preparation of Sida Acuta *Extracts*

The leaves of *S. acuta* were dried for hours in room temperature. The leaves were washed in clean water and air-dried for another 4 hours to make sure that there is no element of water in it. The dried leaves were divided into two parts of 500 g each. One part was boiled in 1 litre of distilled water at 100 ^{0}C for 30 mins. The concoction was allowed to cool and was filtered and stored the laboratory freezer (Thermocool 250) to avoid decomposition recast.

Proximate Composition

The proximate analysis of the samples for moisture, ash, fibre and fat were done by the method of. The nitrogen was determined by micro-Kjeldahl method as described by [3] the percentage Nitrogen was converted to crude protein by multiplying with a factor of 6.25. All determinations were performed in triplicates.

Determination of Carbohydrate

The total carbohydrate content was determined by difference. The procedure described by AOAC, (2005) [3] was used in determining the carbohydrate content. The sum total of the moisture, fat, protein and ash content were subtracted from 100 %. Carbohydrate = 100 - (% protein+ moisture + % fat + % ash).

Determination of Crude Fibre

2 grammes of the sample were put in to a round bottom flask, 100 ml of 0.25 M H_2SO_4 was added and the mixture boiled for 30 minutes. The hot solution was quickly filtered. The insoluble residue was washed with hot water until it is base-free. It was dried to constant weight in an oven at 100 ^{0}C cooled in a dessicator and weighed as(C_2,) the weighed sample was incinerated in a furnace at 55^{0}C for 2 hours, cooled and re-weighed as (C_3). The crude fibre was calculated as the loss in weight on ashing.

% Crude fibre= $C_2 - C_3 \times 100/C_1$

Where, C_1= weight of the original sample (grammes)

Determination of Crude Protein

Te Micro kjeldahl method described by [3] was used to determine crude protein. A quantity of sample, 2 grammes was placed into a 100 ml Kjeldahl flask and a few anti-bump granules were added. An amount, 1 gramme K_2SO_4 and 1 gramme of $CuSO_4$ catalyst were added to speed up the reaction. The flask was placed on a Kjeldahl rack and heated until a clear solution was obtained. At the end of digestion, the flask was cooled and the sample transferred to a 100 ml volumetric flask and made up to the mark with distilled water. After cooling, 20 ml of the digest was pipette- transferred in to Markham semi-micro nitrogen distiller and 10 ml of 40 % NaOH solution was added. The sample was steam- distilled liberating ammonia into a 100 ml conical flask containing 10 ml of 40% Boric acid and 2 drops of methyl red indicator. Distillation process continued until the pink colour of the indicator turns greenish. The control was titrated with 4% boric acid with end-point indicated by a change from greenish to pink colour. The percentage total nitrogen per sample was calculated as:

% Nitrogen = titre value of sample--blank x 0.0014 x dil NH_3 /weight of sample x 5 ml aliquot.

The Crude protein was calculated as ($\% \; Crude \; protein \; (P) = 6.25 \; x \; N$).

Determination of Moisture Content

The method described by was used in the determination and was based on the difference between the net weight and the weight after drying to a constant weight at (100^{0}C) for 24 hours. Crucibles were washed and dried to a constant weight in an oven at 100^{0}C .They were later removed and cooled in a dessicator and weighed (W_1), ground sample of 2 grammes was placed in the weighed moisture dish (W_2). The crucible containing the sample was kept in an oven at 100^{0}C for 5 hours and weighed. It was kept back in an oven and re-weighed after 3 hours to ensure a constant weight (W_3). Moisture content was calculated as;

% Moisture = (W_2—W_3/W_2—W_1)

Determination of Fat Content

The procedure outlined in [3] was used to determine the fat content of the samples. A quantity, 10 grammes of the sample was weighed and poured into a clean thimble of known weight, and placed in the extractor or extraction flask and 50 ml of solvent (n-hexane) was introduced into the flask. Heating was done at 70^{0}C for 4 hours. The solvent was recovered and the flask was transferred which includes the oil and solvent mixture into a hot air oven. This was heated until the solvent evaporates. It was later transferred into desiccator to cool for 15 minutes before weighing the oil. Percentage fat content was calculated as:

% Fat = weight loss/ weight of sample x 100

Determination of Ash Content

The method described by was used. The weight of a clean crucible was taken, 5 grammes of sample were added at the crucible. The crucible and content was placed on the muffle furnace rack until the sample was completely turned into ash. The ash in the crucible was re-weighed and the percentage ash content was calculated as:

$$\% \, Ash = W3 - W1\frac{x100}{W2} - W1$$

Qualitative Phytochemical Analysis of Aqueous Leaf Extract of S. acuta

Phytochemical components of the aqueous leaf extracts of *S. acuta* were screened using methods outlined by [3] AOAC, 2005. The components analysed were Alkaloids, Flavonoids, Saponins, Phenol, Tannins, Steroids, Anthroquinone, Terpinoids, Phlobatanin and Cardiac glycosides. Test for Alkaloids (Mayer's test): Alkaloid solution produces white yellowish precipitate when few drops of Mayer's reagents are added. 2.3.2. Test for Flavonoids (Shinoda's test): A volume 2 ml of aqueous solution of the extract was treated with 1 ml of 10% ammonium hydroxide solution. Yellow fluorescence indicated the presence of flavonoids. Test for Saponins (Frothing test): A 10ml volume of the aqueous extract was mixed with 5 ml of distilled water and shaken vigorously for a stable persistent froth. Test for Phenols (Ferric chloride test): A measured volume 5 ml extract was added to few drops of neutral 5% ferric chloride solution. A dark green colour indicates the presence of phenolic compounds. Test for Tannins (Ferric Chloride test): One ml of water and 1-2 drops of 0.1% ferric chloride solution was added with 1 ml of aqueous extract of *S. acuta* and the blue colour observed indicated the presence of gallic tannins and the green black colour indicated the presence of catecholic tannins. Test for Steroids (sulphuric acid test): Two ml of acetic anhydride was added to 5 ml aqueous extract with 2 ml H_2SO_4. The colour change from violet to green or blue confirms the presence of steroids in sample. Test for Terpenoids (Salowski S-test): A quantity 5 ml of leaf extract was mixed in 2 ml of chloroform and 3 ml of concentrated H_2SO_4 was carefully added to form a layer. A reddish brown coloration at the interface showed positive results for the presence of terpenoids. Test for Cardiac glycosides (Keller-Killani test): A quantity 5 ml of aqueous extract was treated with 2ml of glacial acetic acid containing one drop of ferric chloride solution. This mixture was underlaid with 1 ml of concentrated sulphuric acid. A brown ring at the interface incated a deoxy-sugar characteristic of cardenolides. A violet ring may appear below the brown ring, while in the acetic acid layer, a greenish ring may form just gradually throughout the thin layer. Test for Anthroquinone (Bontruger's test): A quantity 3 ml of aqueous extract was shaken with 3 ml of benzene, filtered and 5 ml of 10% ammonia solution was added to the filtrate. The mixture was shaken and the presence of a pink, red or violet colour in the ammoniacal (lower) phase indicated the presence of free anthraquinones. Test for Phlobatannins: (hydrochloric acid test): Deposition of a red precipitate when 2 ml of extract was boiled with 1 ml of 1% aqueous hydrochloric acid was used as evidence for the presence of phlobatannins.

Oral Acute Toxicity Study

The oral acute toxicity study was done according to the method of [4] Lorke. Eighteen albino rats were used. The test involved two stages. In stage one, the animals were divided in to (3) groups of three rats each and were administered 10, 100 and 1000 mg/kg body weight of the *Sida acuta* leaf extracts respectively. In the second stage, 1600, 2900 and 5000 mg/kg b/w of the *Sida acuta* leaf extracts were administered orally to another set of animals.

Drug preparation

Viagra, (Sildenafil citrate) 5 mg tablet (Pfizer, USA) was bought from Nanka Pharmacy Makurdi. It was dissolved in a10 ml distilled water. The crude extracts of *Sida acuta* were prepared immediately before use and orally administered (per os) in a total volume of 10 ml and 20 ml /kg body weight for ethanolic extract; 30 ml and 40 ml / kg body weight of aqueous extract respectively.

Animal Protocol

Purchase of animals

Thirty five (35) clinically-healthy male Albino rats weighing 180 to 220 grammes were purchased from the animal house of the College of Animal production, Federal University of Agriculture Makurdi, Nigeria. They were housed in clean and dried cages with wire mesh floor and

standard growers mash (feed) and clean water fed them *ad libitum*. Their weight gain was measured every week so as to get the accurate weight gain at the end of acclimatization period. At the end of three (3) weeks of acclimatization, the animals were started on normal feed and water and were administered respectively the extracts for fourteen (14) days. After, the above treatment, sexually mature female rats were introduced to the treated males and were observed for sexual activities.

Experimental Design

Thirty-five (35) male albino rats weighing 180-220 grammes were used for the study; the rats were obtained from the College of Animal production, Federal University of Agriculture Makurdi, Nigeria. The rats were divided into seven groups with five animals per group, and different treatments administered to each group:

Group I: Normal rats (feed + water) normal control

Group II: Rats (feed + water) and administered 0.3 ml Normal saline (Negative control)

Group III: Rats (feed + water) and administered 2 ml (5:10 m/v; viagra / distilled water) (Positive control)

Group IV: Rats (feed + water) and administered 10 ml /kg/ body weight ethanolic extract.

Group V: Rats (feed + water) and administered 20 ml /kg / body weight ethanolic extract.

Group VI: Rats (feed + water) and administered 30 ml /kg/ body weight aqueous extract..

Group VII: Rats (feed + water) and administered 40 ml /kg/ body weight aqueous extract.

Experimental

The seven (7) groups of grower albino rats each of five (5) rats were weighed on arrival and recorded as arrival weight (A_w) and recorded. The animals were fed with standard feed and water *ad libitum* for twenty-one (21) days and were re-weighed, after which their masses- initial and final were recorded. At the end of three (3) weeks of acclimatization, the animals were started on normal feed and water and were administered respectively the *Sida acuta* leaf extracts for Fourteen (14) days. As, the above treatments were ongoing, sexually mature female rats were introduced to the males that are being treated and were observed for enhanced sexual activities that should result from the administration of the *Sida acuta* leaf extracts as aphrodisiac.

Statistical analysis

The data obtained in this study were expressed as mean ± S.D. Test for significance between mean parameter in respect of group differences were performed using student t-test

Results

Physical Properties of Aqueous and Ethanolic Leaf Extract of Sida Acuta

Table1: Organoleptic properties of *Sida acuta* aqueous leaf extract

S/No.	Appearance	Colour	Odour	Taste	Texture
1.	Solution	Dark amber	Slight odour	Bitter leaf water	Slightly slippery

Table 2: Proximate composition of *Sida acuta* ethanol leaf extract

Serial Number	Parameters	Values (%)
1.	Moisture	13.46
2.	Crude ash	8.53
3.	Crude fibre	4-18
4.	Crude protein	16.04
5.	Energy	2760 kcal

N.B. Carbohydrate = 100 **–** (% protein+ moisture + % fat + % ash) = 47.97%

Table 3: Quantitative and qualitative phytochemicals of aqueous and ethanol extracts of *Sida acuta* leaves.

	Quantitative			Qualitative		
S/NO	**Phytochemical**	**Ethanol**	**Aqueous**	**Phytochemical**	**Ethanol**	**Aqueous**
1.	Alkaloids	6.6 ± 0.05	6.61±0.05	Alkaloids	+	+
2.	Saponins	0.00± 0.00	0.00±0.00	Saponins	+	-
3.	Tannins	4.14±0.05	4.14±0.05	Tannins	+	+
4.	Steroids	0.00± 0.00	0.00±0.00	Steroids	-	-
5.	Flavonoids	2.94±0.06	2.57±0.00	Flavonoids	+	+
6.	Cardiac glycosides	5.93±0.06	5.74±0.66	Cardiac glycosides	+	+
7.	Anthraquinone	0.00 ±0.00	0.00±0.00	Anthraquinone	+	-
8.	Phlobatanin	3.92±0.05	3.80±0.05	Phlobatanin	+	+
9.	Terpenoids	5.59±0.05	5.55±0.05	Terpenoids	+	+

Table 4: Acute Toxicity Studies Phase I

Animal Groups	Dosage (mg/kg body weight	Number of deaths
Group I Three rats	**50**	**0/3**
Group 2 Three rats	**100**	**0/3**
Group 3 Three rats	**250**	**0/3**
Group 4 Three rats	**500**	**0/3**
Group I One rat	**1000**	**0/3**
Group 2 Two rats	**3000**	**0/3**
Group 3 Three rats	**5000**	**0/3**

Table 5: Animal groupings and weight variations from arrival to acclimatization stage

Animal Groups	**Arrival weight (g)**	**Acclimatization/final weight (g)**	**Growth rate and development (g)**
1.	181.00 ± 0.05	191.00 ± 0.05	11.00 ± 0.05
2.	191.00 ± 0.05	198.00 ± 0.06	7.00 ± 0.06
3.	195.00 ± 0.04	210.00 ± 0.03	15.00 ± 0.03
4.	198.00 ± 0.45	212.00 ± 0.00	14.00 ± 0.05
5.	200. 00 ± 0.07	214.00 ± 0.00	14.00 ± 0.06
6.	212.00 ± 0.06	219.00 ± 0.05	7.00 ± 0.05
7.	220.00 ± 0.05	228.00 ± 0.06	8.00 ± 0.05

Table 6: Effects of the treatment of the male albino rats with *Sida acuta* leaf extract

Animal Groups	Treatment	Treatment time (Days)	Treatment Start weight	Treatment end weight
1.	Feed + H_2O	14	191.00 ± 0.05	195.00 ± 0.05
2.	Feed + H_2O +3 ml normal saline	14	198.00 ± 0.06	204.00 ± 0.06
3.	Feed + H_2O + 2 ml Viagra	14	210.00 ± 0.03	217.00 ± 0.05
4.	Feed + H_2O + 10 ml ethanol leaf extract	14	212.00 ± 0.06	221.00 ± 0.05
5.	Feed + H_2O + 20 ml ethanol leaf extract	14	214.00 ± 0.06	225.00 ± 0.05
6.	Feed + H_2O + 30 ml aqueous leaf extract	14	219.00 ± 0.05	231.00 ± 0.00
7.	Feed + H_2O + 40 ml leaf extract	14	228.00 ± 0.06	238.00 ± 0.06

Table 7: Sexual parameters determined by animal observations

S/No.	**Parameters**	**Time lag (Mins.) Alcohol extract**	**Time lag (Mins.) Aqueous extract**	**Time lag (Mins) Viagra**
1.	Number of mountings	1-3	1-2	2-4
2.	Duration of intromission	2-5	1-3	2-6
3.	Duration of coitus	10-25	5-15	20-45
4.	Number of ejaculations	3	2	1
5.	Time of detumescence	2	1	NIL

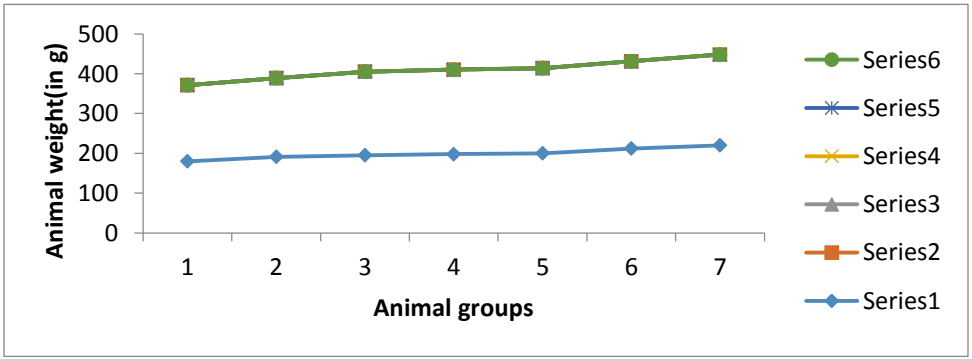

Figure 1: shows the variations in weight of the rats between the arrival and acclimatized stages

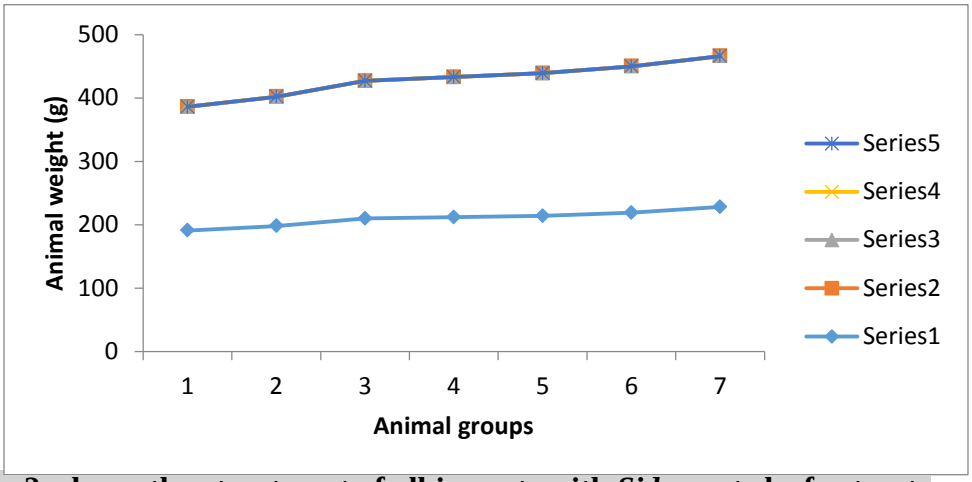

Figure 2: shows the treatment of albino rats with *Sida acuta* leaf extracts

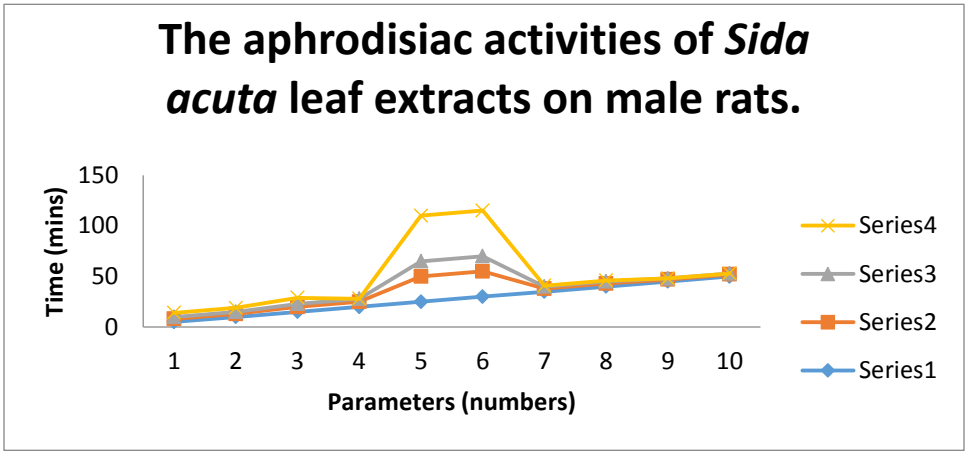

Figure 3: The aphrodisiac activities of sida acuta leaf extracts on male rats.

Key:

Series 1 = coitus frequency
Series 2 = mounting frequency
Series 3 = intromission frequency
Series 4 = ejaculation frequency

Discussion

This study revealed the activities of aqueous and ethanolic extracts of *Sida acuta* leaves as an aphrodisiac [5-8]. The extraction here was carried out in two phases. The harvested leaves were allowed to dry in room temperature for 12-24 hours and one part was washed with normal saline and boiled at 100 ◦ C for 15 minutes. The ethanolic extraction was carried out with soxhlet apparatus [3]. The two extracts were subjected to physicochemical analysis, and the organoleptic properties of the aqueous extract of *Sida acuta* showed: appearance; solution, colour; dark amber, odour; slight odour, taste; bitter leaf water and texture; very slightly slippery. These properties are comparable with the report of [3] Also, the chemical of showed the proximate composition as dry matter; 92.29%, crude proteins; 16.04 %, ash; 8.53 %, crude fibre; 4.18 % ,ethanol extract; 1.57 % and energy; 2760 kcal/kg. This proximate composition is in agreement is in agreement `with the work of [6]on *Sida acuta,* which is of Malvaceae family and in variation with *cross check* of Leguminceae by [8]. Moreover, the proximate analysis of foods are used as an index for comparing the nutrients composition of a given plant material. Here, the proximate analysis showed that *Sida acuta* extracts are rich in various nutrients and other bioactive compounds that confer it the ability to perform multiple biological activities and a good natural alternative.

However, it has been reported that the active component of viagra is the amino acid L-arginine from coconut. Hence, coconut potentiates viagra in a man without erectile dysfunction [9 - 12]. L-arginine is fortunately is among the amino acid composition of *Sida acuta* leaf extracts. This may likely be why the *Sida acuta* extracts mimic Viagra. Research [14 - 17] also showed that the ethanol synergises with

arginine in *Sida acuta* extracts to potentiate its aphrodisiac potentials. This said synergism increases the aphrodisiac roles of *Sida acuta* very well, but unlike the synthetic viagra has never produced priapism either in experimental animals or in humans during validation trials [18 - 22] In rodents, an increase in feed and water consumption is an important index of good health, growth and development and generally result to increase in weight. Tables (12 and 13) show an increase in weight of the rabbits compared to their arrival weight. Weight gain in experimental animal models is an indicator of improved environment, feed intake which included pelletized standard feed and good acclimatization care. However, the increased body weight could be due to fortification of feed and increased feed and water intake observed all through the experimental period. The increase in weight of the experimental animals suggests that they increasingly accumulated calories from their improved ration and used that to store triglycerides in their bodies--adiposity. Although the animals used in this study were fed with normal grower's pelletized feed. Standard feed might have allowed proper absorption and assimilation of the nutrients from their ration. The presence of dense nutrients may have stimulated appetite and increased feed assimilation resulting in increased weight gain [11, 21, 22]. In rodents, an increase in feed and water consumption is an important index of good health, growth and development and generally result to increase in weight. Tables (12 and 13) show an increase in weight of the rabbits compared to their arrival weight. Weight gain in experimental animal models is an indicator of improved environment, feed intake which included pelletized standard feed and good acclimatization care. However, the increased body weight could be due to fortification of feed and increased feed and water intake observed all through the experimental period. The increase in weight of the experimental animals suggests that they increasingly accumulated calories from their improved ration and used that to store triglycerides in their bodies--adiposity. Although the animals used in this study were fed with normal grower's pelletized feed. Standard feed might have allowed proper absorption and assimilation of the nutrients from their ration. The presence of dense nutrients may have stimulated appetite and increased feed assimilation resulting in increased weight gain [1121;22]. Organ weight is also an important index of sound physiological status in animals. The relative organ weight is important in determining the exposure of an organism to improved ration, better environmental conditions as well as good animal management skills. The arrival weight and acclimatization organ weight of the experimental animals as shown in (Table 5) are the reflection of the animals weight gain in the course of the experiment. Hence, it is of fundamental experimental significance that when a given set of animals are kept to acclimatize, with the environmental conditions, feeding and watering as well as other experimental factors put in place, the animals are bound to increase their weight due to growth and development that accompany acclimatization. The result of the acute toxicity test showed that *Sida acuta* leaf extracts is edible to the experimental animals for the dosages of 50 mg/kg b.w to 5000 mg/kg b.w, no behavioural and /or physiological changes could be observed in the animals for upwards 96 hours and beyond. This agreed with the work of [4;10] who worked on phytochemicals and acute toxicity of aqueous and methanol root extracst of Emilia coccinea. Hence, Side acuta leaf extracts are very edible to man and his animals as the weed has abundant nutritional as well as medicinal values [7,13,27]. The sexual parameters determined showed that mounting frequency increases in the order of: viagra > methanol > aqueous. Also, the intromission frequency has the order of: viagra > methanol > aqueous. The coitus frequency showed its own order: viagra > methanol >aqueous. The activities of *Sida acuta* leaf extract here agreed with the work of [19,20,21] where he reported that the ethanolic extract of *Caesalpinia bonduc* root on sexual behaviour of male wistar rats. [22,23], also reported the effect of *Microdesmis keayana* roots on sexual behaviour of male rats. The aphrodisiac- *Sida acuta* extracts in this work performed very well. [9,11,12,24,25,26,27] In ejaculation frequency and detumescence frequency, there was a significant ($p > 0.05$) increase in the order of methanol > aqueous > viagra. It was these last two parameters that actually defy the aphrodisiac activities of Viagra, but promoted that of *Sida acuta* extracts. Sildenafil citrate (viagra) usage has been a risk factor in the aetiology of priapism. Priapism is a pathological condition of penile erection that persists beyond, or is unrelated to sexual stimulation. [1]

Conclusion

Viagra is a synthetic drug that performs aphrodisiac function very well but is toxic, have dangerous side effects, is not available every time and place. The cap of it all is that it causes a pathological condition- priapism which oftentimes is fatal. Unlike viagra, *Sida acuta* extracts also perform aphrodisiac functions, originated from plants and have no toxicological effects, it is inexpensive, available all time and the plant contains highly nutritious and medicinal components that are good for man's health and existence.

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