from many plants have been employed among various cultures to improve sexual performance in man and animal models all yielding different effects.

Datura stramonium is an energetic, narcotic substance. Doses of *D.stramonium* are known to increase the sexual appetite and power and especially the seed is reported (Brandes, 1821) to contain mixtures of several alkaloids chief of which is daturine combined with malic acid. Baker and Jordan (1936) pronounced daturine to be identical with atropine but later daturine was differentiated to hyoscyamine, atropine and hyoscine. Hyoscyamine occurred in major amount.

Every part of the plant possesses medicinal properties, so the plant is seldom employed in medicine. In addition, all parts of *Datura stramonium* can impart their properties to water, alcohol and certain oils. This study explores the aphrodisiac potential of *Datura stramonium* extract as it may affect semen output and seminal characteristics in the goat buck. The dosage of administration is also suggested.

MATERIALS AND METHOD

Animals and the management

The experiment was carried out in the Department of Animal Production, University of Ilorin, Ilorin, Nigeria. The study involved 25 West African dwarf (WAD) bucks, 9-15 months and weighed 7.21±2.1 kg. The goat bucks were housed well fenced pens with adequate shade. They were fed cut, wilted *Panicum maximum* as basal feed with supplements of 500 gd^{-1} concentrate made of maize (30%), wheat offal (32%), palm kernel cake (25%) groundnut cake (10%), bone meal (2%) salt (0.5%) and 0.5% of vitamin/mineral premix. As routine practice the goat bucks were dewormed and administered broad spectrum antibiotics. Fresh water was offered *ad libitum*. The animals were kept in the pens for 28 days to stabilize prior to allotment to treatments.

Preparation of the extract

Fifty grams of dried, selected and cleaned seeds of *Datura stramonium* was ground and leached in 200 ml of distilled water (Stout and Tolman, 1941; Lovett *et al.*, 1981). The seeds were soaked in water for 48 hours without agitation. The content was passed through 2.00 mm woven wire sieve and filtered with 125 mm Whatman 42 filter paper to receive the extract.

Trials and dosage administration

The goat bucks were arranged in the order of live weight and randomly allotted to five treatments; there were five bucks per treatment. Doses consisted of 0.05 saline solution and (ml of aqueous extract) 0.02, 0.04, 0.06 and 0.08 *Datura stramonium* offered based on the body weight. A group of the goats was placed on the saline solution and the four others placed each on the dosages of the Datura extract. The animals received dosages of the extract for ten consecutive days by subcutaneous injection (Brozos *et al.*, 1998).

Semen Harvest

After one week of administration of Datura extract, semen was harvested from the bucks twice in a week for four weeks. Semen was collected in graduated tubes (Oyeyemi *et al.*, 2001).

Semen Analysis

The procedure of Oyeyemi *et al.* (2001) was applied to evaluate the semen samples collected. The volume of ejaculate was read off the graduated glass container. Mass activity was determined within one minute of collection in a drop of concentrated semen without cover slip under low magnification (x4). Mass motility was calculated by estimating the percentage of spermatozoa with forward movement in a sample ejaculate. This is calculated by placing a drop of semen on a microscope slide and observing (at 100x magnification) the number of spermatozoa with forward movement in relation to those with other than forward movement. Colour of the

ejaculate was determined by visual assessment from white to milky to creamy. The Neaubaer haemocytometer was modified to determine the sperm concentration. It contained a counting chamber of 0.1mm in depth with area on the bottom of the chambers of 1.0mm^2. This square was subdivided into 25 smaller squares. A dilution rate of 1:500 was used (Bearden and FuQuay, 1997). After dilution with eosin solution, the cover slip was placed at the edge of the slide. Capillary action would draw the semen under the cover slip. The slide was then placed under the microscope and the grid of the counting chamber was located with the medium using the objective power magnification of 100. The 1.00mm square area was examined for uniform distribution of sperm. The high-power objective (x400) was then used to count the number of sperm cells within the desired number of squares. Five squares were counted and the number of sperm cells multiplied by 5 to obtain the number of sperm in 0.1mm^3. The number of sperm cells was obtained by the formula

No of sperm cells/ml = No of sperm cells in 0.1mm^3 x 10 x dilution rate x 1000

Sperm morphology was calculated by evaluating the number of normal spermatozoa in a sample ejaculate in relation to sperm with primary and secondary abnormalities. This is done by staining a drop of semen with eosin solution and observing the slide under the microscope with high magnification (x40).

Statistics

All data were analyzed by SAS and means tested in a COSTAT program.

RESULT

The semen colour of the bucks on Datura extract was creamy over the milky white of the control. The semen volume from bucks on Datura doses was significantly reduced ($P<0.05$) compared with the control. Datura doses evoked increased mass activity in the semen being high and comparable at 0.04, 0.06 and 0.08 doses. Mass motility is significantly high ($P<0.05$) in all treatment groups over the control. The highest value occurred at 0.06 ml Datura dosage. The sperm concentration increased in all treatments over the control. The increase in the concentration was significant ($P<0.05$) in 0.04, 0.06 and 0.08 Datura dosages. The highest obtainable value was at 0.06ml dosage. Semen pH was in the range 7.3 to 7.5 in all the treatments.

DISCUSSION

The physical characteristics of the serum are presented in the table. The semen colour from the goats on Datura extract (0.02 to 0.06) compares well with the report of Bitto & Egbunike (2012) on West African dwarf buck. *Datura stramonium* extract is suggested to influence semen volume as the result in this study showed semen volume 80% lower than Bitto & Egbunike (2012) value for pubertal WAD buck, whereas a similar determination for adult buck in this study was 19% higher than Bitto & Egbunike (2012) value for adult West African dwarf buck.

The Datura seed extract seems to evoke increased semen mass activity, semen mass motility and sperm concentration with peak activity, motility and sperm concentration occurring at 0.06 dosage. The observed peak activity compares with similar estimate (Bitto & Egbunike, 2012) for pubertal WAD buck while the sperm motility and concentrations compare well with the estimates for adult WAD buck. *Datura stramonium* does not in any way affect the pH of the fluid medium in which the sperm cells are maintained.

The administration of Datura extract may cause the lowering of the semen volume but findings of this study strongly suggest that Datura extract cause positive influence on the quality of the semen in the goat. The suggested dosage based on this study is 0.06ml/kgBW of the goat buck.

Without reducing the quality of the semen, the extract of *Datura stramonium* could be useful in enhancing the sexual/breeding capabilities of genetically proven goat bucks in conditions of old age and/or weak erectile function.

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Mean spermiogramic characteristics of semen of WAD goat bucks as influenced by Datura plant extract

Parameters	Treatment (ml/kgBW)					
	0.05 Saline	0.02	0.04	0.06	0.08	S.E
Semen volume, ml	0.56	0.12	0.11	0.11	0.10	0.061
Mass activity	1.08	2.08	2.42	2.58	2.58	0.083
Mass motility, %	64.17	71.67	77.78	80.00	78.33	2.841
Ejaculate colour	White	Milky/ Creamy	Milky/ Creamy	Milky/ Creamy	Creamy	--
Sperm concentration, $x10^9$/ml	1.02	1.32	1.55	1.61	1.51	0.051
Semen pH	7.4	7.3	7.4	7.5	7.5	0.105

S.E: Standard error of means;a,b,c: values along the same row with different superscripts are significantly different P<0.05)