Nigerian Veterinary Journal
Vol 34 (1) 709-719

Semen Characteristics and Haematological Parameters of West Africa Dwarf Bucks Treated with Aqueous Extract of *Cnidoscolus aconitifolius* (Chaya)

OYEYEMI, M.O *, and AJANI, O.S.

Department of Veterinary Surgery and Reproduction, Faculty of Veterinary Medicine, University of Ibadan, Nigeria.
*Corresponding Author: oluoyeyemi03@yahoo.com; +2348023255598, drgoforth09@yahoo.com; +2348038087625.

SUMMARY

The effect of *Cnidoscolus aconitifolius* extract was carried out on eight West African Dwarf breeding Bucks weighing between 13kg-15kg and aged 18-24 months. The experiment spanned through 14 weeks. The animals were divided into two groups (T1 and T2) of four bucks each. 5mls of 20% and 30% Chaya leaf extract was administered to groups T1 and T2 each day, respectively, for two weeks. Semen and Blood samples were collected and analyzed.

The result showed mild effects on the semen characteristics though there were no significant changes (P>0.05) in the semen volume, motility, percentage livability, the semen count (sperm concentration) and morphology.

There was no significant effect (P>0.05) noticed on all the blood parameters except for the WBC count in which there was significant reduction (P<0.05) of T1 and T2. T1, Pre-treatment (22.80± 1.75), first week post treatment-WPT (18.65± 3.00), and second WPT (12.50± 1.39). T2, pre-treatment (14.85 ± 1.58), first WPT (22.67 ± 1.02), and second WPT (11.85 ± 0.39).

It can be concluded that administration of either 20% or 30% extract of *Cnidoscolus aconitifolius* has no negative effects on the semen characteistics and haematological parameters of West African Dwarf (WAD) breeding bucks.

KEY WORDS: ***Cnidoscolus aconitifolius, Haematological parameters, Semen characteristics.***

INTRODUCTION

Recently, a great deal of attention has been paid to some plant-derived chemicals that influence endocrine activities in both humans and animals due to their possible beneficial and sometimes adverse effects. Some of these plants possess fertility and anti-fertility effects through their action on hypothalamo-gonadal axis or direct hormonal effects through their action on hypothalamo-pituitary-gonadal axis or direct hormonal effects on reproductive organs (Shibeshil *et al.*, 2006).

Cnidoscolus aconitifolius (Chaya) is a perennial shrub of the Family *Euphorbiaceae* commonly found in the tropics. It is commonly eaten as vegetable in soup condiment in South Western Nigeria where it is called "Iyana Ipaja". High fiber content and antibacterial activities of this plant have been reported (Oyagbemi *et al.*, 2008). Apart from the antibacterial activities (Lenzen, 2008), the ameliorative effect of *Cnidoscolus aconitifolius* on anaemia and increased erythrocyte osmotic fragility induced by Protein Energy Malnutrition (PEM) has been reported (Awoyinka *et al.*, 2007) while its antidiabetic property has also been elucidated (Oyagbemi *et al.*, 2008).

Chaya is being fed to animals as a laxative, diuretic, circulation stimulant and to improve digestion (Rowe, 1994), but there is paucity of information on its effects on reproduction in the goat. Thus, the need to carry out this study to determine the effects of crude extract of *Cnidoscolus aconitifolius* (Chaya leaves) on the semen characteristics and haematological parameters of West African Dwarf (WAD) breeding bucks.

MATERIALS AND METHODS

LOCATION OF STUDY

This study was carried out at the Small Ruminant Unit and Theriogenology laboratory of the Veterinary Teaching Hospital, University of Ibadan. University of Ibadan is about 6km to the North of Ibadan city, at latitude 2nd longitude 3°54' East at mean altitude of 277m above Sea level. The annual rainfall is 1,200mm, most of which fall between April and November, and a dry season from December to March (Oyeyemi and Fayomi, 2011). This study was carried out between April and June, 2009 under the same ambient temperature (27-31°c) and relative humidity of about 80%.

EXPERIMENTAL ANIMALS

The study was conducted on eight healthy West African Dwarf (WAD) bucks weighing between 13kg-15kg and aged 18-24 months kept at the small ruminant unit of the Department of Veterinary Surgery and Reproduction, University of Ibadan. The experiment spanned for 14 weeks. The animals were divided into two groups T1 and T2, with 4 animals in each group.

ANIMAL HOUSING AND MANAGEMENT

The goats were housed in a concrete and well ventilated pen with four animals per pen. The size of the pen was 4.7m x 3.14m. They were permanently in the pen and were fed sheep concentrates (containing, Crude Protein 19.16%, Crude Fibre 6.63%, Fat 3.67%, Energy 2,372Kcal, Calcium 0.88%, Lysine 0.60%) throughout the period of experiment. The pen was regularly cleaned and the goats were stabilized or allowed to acclimatize with the new environment for 3 weeks. The goats were de-wormed with Albendazole bolus (100mg/kg) after weighing. They were vaccinated against Peste de petit ruminatum (PPR) using Peste de Petit Ruminants (PPR) vaccine (NVRI VOM) subcutaneously and Veterinary attentions were provided when required.

PLANT MATERIAL

Cnidoscolus aconitifolius leaves were harvested in the University of Ibadan, Oyo

State, Nigeria and were identified at the herbarium of the Department of Botany, University of Ibadan. The leaves were picked, cleaned, weighed and macerated.

TREATMENT GROUPS

Group T1 was fed with 20% Chaya leaf extract.
Group T2 was fed with 30% Chaya leaf extract.
This was based on the recommended percentage value reported by Oyagbemi (2008).
Each buck in the Group T1 and T2 was given 5mls of the Chaya leaf extract orally.

BLOOD ANALYSIS

Blood samples were collected intravenously from the jugular vein into bottles with anticoagulant two weeks before treatment with the extract and at every two weeks post treatment.
They were analyzed to determine the packed cell volume (PCV), Red blood cell count, white blood cell count, differential lymphocyte count and differential neutrophil count using conventional methods as described by Reece, (1997).

Determination of Packed Cell Volume (PCV) By Microhaematocrit Method: Plain capillary tubes were filled with the blood samples up to 2/3 of the whole length. The vacant end of each tubes were placed in the haematocrit and centrifuged for five minutes at a speed of 3000 revolutions per minute and the percentage of the packed cell volume were read from the graphic reader.

Erythrocyte (RBC) Count: The RBC count was determined using haemocytometer. Erythrocyte diluting pipette was used to draw the blood samples to a point marked 0.5 on the pipette. The tip of the pipette was wiped free of blood and filled with blood cell diluting fluid drawn to a point marked 101 on the pipette. This was then mixed together. About one third of the content of the pipette was discarded and the counting chamber filled. The cells were then observed under high power Erythrocytes in 5 of the 25 squares in the central area of each chamber of the haemocytometer were counted, taking the 4 corner squares and central one.

Leucocyte Count: Total white blood cell count was determined in a haemocytometer using the white blood cell diluting fluid. Leucocyte diluting pipette was used to draw blood sample to a point marked 0.5 and filing up to the 11 mark using the Leucocyte diluting fluid. The white blood cells in the 4 large corner square of the haemocytometer chamber were then counted and the total multiplied by 50.

Differential White Blood Cell Count: A clean slide with a small drop of blood was placed on a flat surface. Another slide was then used to push the blood forward, smoothly and quickly. The slide was then allowed to dry and then fixed in absolute methanol for about 5 minutes. Giemsa stained slides were used for Leucocyte count. They were examined for different Leucocyte types under oil immersion of a microscope. The different Leucocyte types were than expressed as percentage of the total.

SEMEN COLLECTION AND ANALYSIS

Semen was be collected from the rams using electro-ejaculation method, samples were collected thrice from these animals with 2 weeks intervals between the first, second and third collection.
After semen collection, the samples were analysed promptly as described by Oyeyemi *et al.* (2001). Sperm morphology, motility, mass activity, life-dead ratio and concentration of semen were determined.

Morphology: To determine morphology, smear of semen sample was made. On a clean warm glass slide, a drop of semen was placed as well as two drops of Wells and Awa stain. The semen and stain were thoroughly mixed together, and a smear was made on another slide. The smear was dried and observed using light microscope starting from low power

magnification to high power magnification (Oyeyemi *et al.*, 2001). The presence of abnormal cells out of at least 600 sperm cells from several fields on the slide was noted and their total percentage estimated.

Concentration: The concentration was determined by the use of improved Neubaeur heamocytometer. Semen was pipetted to the 0.5 mark using the blood cell pipette and this was made up to1.0 mark with normal saline. The normal saline serves both to dilute the semen and fix the spermatozoa present. The pipette was introduced into pipette shaker and allowed to mix. Above 2 or 3 drops of fluid was discarded from the pipette before being introduced into the counting chamber of the heamocytometer, the five square that formed the diagonal segment of square would be counted.

Motility: Motility means the percentage of sperm in a unidirectional progressive movement over a field in the microscope. It was evaluated in a small drop of semen with one magnification of about X40. Only sperm cells moving in a straight forward unidirectional motion were included in the motility count while sperm cells moving in circles, backward direction or showing pendulating movement (bunting) would be excluded. Good semen should have at least 60% motility at the time of collection.

Percentage Livability: This was done by mixing one drop of semen with one drop of Eosin-Negrosin stain on a warm slide. A thin smear was then made of the semen and stained. air-dried and observed under the microscope. The ratio of the invitro dead sperm cells was observed and it is based upon the principle of Eosin penetrating and staining the dead autolysing sperm cells whereas viable sperm cells repel the stain (Oyeyemi *et al.*, 2001).

Morphological Studies: This is used to determine the presence and incidence of morphologically defective spermatozoa. Eosin-Nigrosin can also be used for this purpose. The sperm cells were observed for morphological defect using the wells and Awa stain. The stained smear would be air-dried and observed under microscope. The defective sperm cells can either be primary, secondary or tertiary or head, mid-piece and tail abnormalities. The spermatozoa abnormalities were noted according to Oyeyemi *et al.* (2001).

DATA ANALYSIS

The data generated were analysed using the following tools- Test of Homogeneity of variance, multiple comparisons and Analysis of variance, (one way ANOVA). The analysis was done using SPSS computer software package. (Statistical Analysis Systems, users guide, Version 6.03, SAS Institute Inc North Carolina USA).

RESULTS

RESULT OF SEMEN CHARACTERISTICS

TABLE I: Semen characteristics of WAD goats fed 20% extract at Pre-treatment (Control), first week post-treatment and second week post-treatment.

	Control ± *SEM*	After 1st week= *SEM*	After 2nd week= *SEM*
Semen volume (mls)	0.15 ± 0.03^a	0.20 ± 0.04^a	0.20 ± 0.04^a
Motility (%)	82.50 ± 2.50^a	85.00 ± 2.89^a	77.50 ± 4.79^a
% Livealibilty	91.25 ± 1.25^a	93.75 ± 1.25^a	92.50 ± 1.44^a
Semen count (x 10^6)	402.75 ± 40.12^a	399.25 ± 21.85	358.50 ± 18.76^a

Means with the same superscripts are not significantly different at (P> 0.05) level of significance along rows. SEM: *Standard Error of Mean*

It was discovered that the semen volume of the goats fed 20% extract before treatment (Control) (0.15+_0.03ml), after one week of treatment increased to (0.20 ± 0.04ml) and after two weeks of treatment (0.20 ± 0.04ml) were not significantly different (P> 0.05) as known in table I.

The motility increased after 1st week of treatment (85.00 ± 2.89%) but reduced to (77.50 ± 4.79%) after 2nd week of treatment though the differences were not significant (P> 0.05).

The percentage liveability also increased after 1st week of the treatment (93.75 ± 1.25%) but reduced to (92.50 ± 1.44%) after 2nd week of treatment though the differences were not significant (P> 0.05).

The semen count was reducing as the week of treatment increases, the control was (402.75 ± 40.12 x 10^6), after 1st week of treatment (339.25 ± 21.85 x 10^6) and value after 2nd week of treatment was (358.50 ± 18.76 x 10^6), though the differences were not significant (P> 0.05).

TABLE II: Semen characteristics of WAD goats fed 30% extract at Pre-treatment (Control), first week post-treatment and second week post-treatment.

	Control± *SEM*	After 1st week± *SEM*	After 2nd week± *SEM*
Semen volume (mls)	0.20 ± 0.41^a	0.15 ± 0.29^a	0.13 ± 0.33^a
Motility (%)	70.00 ± 16.83^a	72.50 ± 4.79^a	70.91 ± 5.79^a
% Livealibilty	81.25 ± 13.75^a	90.00 ± 3.54^a	95.00 ± 0.00^a
Semen count (x 10^6)	342.00 ± 68.40^a	337.00 ± 44.51	325.67 ± 12.99^a

Means with the same superscripts are not significantly different at (P> 0.05) level of significance along rows.

It was observed that the semen volume of the goats fed 30% extract before treatment (Control) (0.20 ± 0.41ml), reduced after 1st week of treatment increased to (0.15 ± 0.29ml) and after 2nd weeks of treatment (0.13 ± 0.33ml) were not significantly different (P> 0.05) as known in table II.

The motility increased after 1st week of treatment (72.50 ± 4.79%) and later decreased after 2nd week of treatment (70.91 ± 5.79%) though the differences were not significant (P> 0.05).

The percentage livability was increasing as the week treatment increases though the differences were not significant (P> 0.05).

The semen count was increases after1st week of treatment (337.00 ± 44.51 x 10^6), but reduced after 2nd week of treatment (325.67 ± 12.99 x 10^6) though the differences were not significant (P> 0.05) as shown in Table II.

SPERM CELL MORPHOLOGICAL ABNORMALITIES

TABLE III: Semen morphological abnormalities of WAD goats fed 20% extract at Pre-treatment (Control), first week post-treatment and second week post-treatment.

	Control±*SEM (%)*	After 1st week± *SEM(%)*	After 2nd week± *SEM(%)*
Tailless Head (MHWT)	0.66 ± 0.60^{a}	0.97 ± 0.27^{a}	1.22 ± 0.39^{a}
Headless Tail (MHWT)	0.63 ± 0.00^{a}	0.75 ± 0.05^{a}	0.91 ± 0.16^{a}
Rudimentary Tail	0.22 ± 0.60^{a}	0.29 ± 0.60^{a}	0.28 ± 0.33^{a}
Bent Tail	0.94 ± 0.03^{a}	1.22 ± 0.06^{bc}	1.35 ± 0.09^{c}
Curved Tail	0.94 ± 0.03^{a}	1.19 ± 0.03^{bc}	1.35 ± 0.009^{c}
Curved mid-piece	1.00 ± 0.05^{a}	1.41 ± 0.13^{bc}	1.41 ± 0.14^{c}
Bent mid-piece	0.91 ± 0.60^{a}	1.13 ± 0.51^{ab}	1.47 ± 0.11^{c}
Coiled Tail	0.19 ± 0.03^{a}	0.32 ± 0.06^{ab}	0.16 ± 0.03^{ac}
Total Abnormal	5.47 ± 0.16^{a}	7.25 ± 0.38^{bc}	8.13 ± 0.69^{c}
Total Normal	94.53 ± 0.16^{a}	92.75 ± 0.39^{bc}	91.88 ± 0.69^{c}

Means with the same superscripts are not significantly different at (P> 0.05) level of significance along rows

The sperm cell morphological abnormalities observed in this study include: Tailless head (normal head without tail), headless tail (normal tail without head), rudimentary tail, bent tail, curved tail, curved mid piece, bent mid-piece and coiled tail.

It was observed that the number of sperm cells with Tailless Head (Normal head without tail) was increasing as the week of treatment increases, the value before treatment (control) i.e (0.66 ± 0.60%) after 1st week of treatment (0.97 ± 0.27%) and after 2nd of treatment (1.22 ± 0.39%) though the values were significantly different (P>0.05).

There was an increase in the number of cells with rudimentary tail after 1st week of treatment (0.29 ± 0.06%) but later reduced to (0.28 ±0.33%) after 2nd week of treatment though the difference was not significantly different (P> 0.05)

The number of sperm cells with Bent tails was increasing as the week of treatment increases and there was a significant different (P< 0.05) between the values before treatment (control) (0.94 ± 0.03%) and 1st week of treatment (1.22 ± 0.60%), why the number between 1st week after treatment (1.22 ± 0.60%) is not significantly different (P> 0.05) from the number at second week of treatment. This same trend was observed for the numbers of sperm cells with curved tail, curved mid-piece, total abnormal cells, where the values were increasing as the week of treatment increases as shown in Table III.

The number of sperm cells with coiled tail increased to (0.32 ± 0.06%) after 1st week of treatment and reduced to (0.16 ± 0.03%) after 2nd week of treatment and the differences between them were significant (P< 0.05) as shown in Table III.

TABLE IV: Semen morphological abnormalities of WAD Goats fed 30% extract at Pre-treatment (Control), first week post-treatment and second week post-treatment.

	Control ± *SEM (%)*	After 1st week= *SEM (%)*	After 2nd week= *SEM(%)*
Tailless Head (MHWT)	0.66 ± 0.60^{a}	0.67 ± 0.08^{ab}	1.46 ± 0.37^{c}
Headless Tail (MHWT)	0.72 ± 0.60^{a}	0.75 ± 0.72^{a}	1.09 ± 0.43^{c}
Rudimentary Tail	0.25 ± 0.00^{a}	0.25 ± 0.00^{a}	0.29 ± 0.43^{a}
Bent Tail	0.97 ± 0.03^{a}	1.33 ± 0.83^{bc}	1.30 ± 0.83^{c}
Curved Tail	0.88 ± 0.09^{a}	1.17 ± 0.11^{ab}	$1.21 \pm 0.04a^{c}$
Curved mid-piece	0.94 ± 0.63^{a}	1.46 ± 0.11^{bc}	1.50 ± 0.12^{c}
Bent mid-piece	0.94 ± 0.03^{a}	1.46 ± 0.25^{ab}	1.50 ± 0.12^{c}
Coiled Tail	0.19 ± 0.03^{a}	0.34 ± 0.43^{ab}	0.17 ± 0.04^{c}
Total Abnormal	5.53 ± 0.78	7.59 ± 0.23	8.50 ± 0.59
Total Normal	94.47 ± 0.79	92.42 ± 0.23	91.50 ± 0.59

Means with the same superscripts are not significantly different at (P> 0.05) level of significance along rows.

The sperm cell morphological abnormalities observed in this study include: Tailless head (normal head without tail), headless tail (normal tail without head), rudimentary tail, bent tail, curved tail, curved mid piece, bent mid-piece and coiled tail.

It was observed that the number of sperm cells with Tailless Head (Normal head without tail) was increasing as the week of treatment increases, the value before treatment (control) i.e (0.66 ± 0.60%) after 1st week of treatment (0.97 ± 0.27%) and after 2nd of treatment (1.22 ± 0.39%) though the values were significantly different (P>0.05).

There was an increase in the number of cells with rudimentary tail after 1st week of treatment (0.29 ± 0.06%) but later reduced to (0.28 ±0.33%) after 2nd week of treatment though the difference was not significantly different (P> 0.05)

The number of sperm cells with Bent tails was increasing as the week of treatment increases and there was a significant different (P< 0.05) between the values before treatment (control) (0.94 ± 0.03%) and 1st week of treatment (1.22 ± 0.60%), why the number between 1st week after treatment (1.22 ± 0.60%) is not significantly different (P> 0.05) from the number at second week of treatment. This same trend was observed for the numbers of sperm cells with curved tail, curved mid-piece, total abnormal cells, where the values were increasing as the week of treatment increases as shown in Table III.

The number of sperm cells with coiled tail increased to (0.32 ± 0.06%) after 1st week of treatment and reduced to (0.16 ± 0.03%) after 2nd week of treatment and the differences between them were significant (P< 0.05) as shown in Table III.

HAEMATOLOGICAL RESULTS

TABLE V: Haematological Results of WAD Goats fed 20% extract at Pre-treatment (Control), first week post-treatment and second week post-treatment.

	Control± *SEM*	After 1st week± *SEM*	After 2nd week± *SEM*
PCV %	23.00 ± 2.42^{a}	25.00 ± 0.87^{a}	24.00 ± 1.73^{a}
Hb %	7.50 ± 6.79^{a}	8.33 ± 0.27^{a}	8.03 ± 0.58^{a}
RBC	25.97 ± 1.93^{a}	23.96 ± 0.74^{a}	21.84 ± 2.54^{a}
WBC	22.80 ± 1.75^{a}	18.65 ± 3.00^{a}	12.50 ± 1.39^{b}
Platelets	12.50 ± 1.55^{a}	10.00 ± 1.68^{a}	10.75 ± 1.80^{a}
MCV	11.25 ± 1.38^{a}	10.00 ± 1.38^{bc}	10.50 ± 0.50^{c}
MCH	2.50 ± 0.29^{a}	3.75 ± 0.48^{ab}	3.50 ± 0.29^{c}
MCHC	32.00 ± 0.00^{a}	33.00 ± 0.00^{ab}	33.00 ± 0.00^{ac}
Lym	66.25 ± 4.84^{a}	65.75 ± 5.39^{a}	68.75 ± 4.77^{a}
Neut	33.75 ± 4.84^{a}	34.25 ± 5.39^{a}	31.25 ± 4.77^{a}
ESR	1.50 ± 0.29	2.25 ± 0.48	3.50 ± 0.50

Means with the same superscripts are not significantly different at (P> 0.05) level of significance along rows.

It was observed that WBC value was decreasing as the week of treatment increases. There was a significant difference ($P<0.05$) between the value before treatment (Control) (22.80±1.75) and after second week of treatment (12.50±1.39) but there was no significant difference between the control and the value after the 1st week of treatment (18.65±3.00) and also between 1st and 2nd week after treatment ($P>0.05$) shown in Table V.

The RBC value was also decreasing as the week of treatment increases though the differences were not significant ($P> 0.05$) as shown in Table V. The difference in the mean values of PCV, Hb, Platelets, MCV, MCHC, Lynphocytes, and Neutrophils were also not significant ($P> 0.05$) for the three period as shown in table V.

The ESR value was increasing as the week of treatment increases. The mean difference between the control (1.50 ± 0.29) and 2nd week (3.50 ± 0.50) is significant after treatment, and between 1st week and 2nd week after treatment.

The mean difference between MCH increases after 1st week of treatment and later reduced after 2nd week of treatment. The control value (2.50 ± 0.29) and after first week of treatment (3.75 ± 0.48) are significant ($P> 0.05$) but there is no significant difference ($P> 0.05$) between the control and 2nd week after treatment (3.50 ± 0.29). Also there was no significant difference ($P> 0.05$) between 1st and 2nd week of treatment.

TABLE VI: Heamatological results of WAD Goats fed 30% extract at Pre-treatment (Control), first week post-treatment and second week post-treatment.

	Control± *SEM*	After 1st week± *SEM*	After 2nd week± *SEM*
PCV %	23.00 ± 1.47[a]	22.75 ±2.18[a]	24.50 ± 2.53[a]
Hb %	7.50 ± 0.50[a]	7.58 ± 0.74[a]	8.18 ± 0.85[a]
RBC	18.85 ± 3.07[a]	20.93 ± 0.55[a]	23.82 ± 2.04[a]
WBC	14.85 ± 1.58[a]	22.67 ± 1.02[ab]	11.85 ± 0.39[c]
Platelets	10.75 ± 0.75[a]	8.25 ± 0.75[a]	9.00 ± 1.22[a]
MCV	10.75 ± 0.75[a]	10.75 ± 1.11[a]	9.75 ± 0.48[c]
MCH	3.25 ± 0.48[a]	3.00 ± 0.00[a]	3.25 ± 0.25[a]
MCHC	32.00 ± 0.00[a]	33.00 ± 0.00[ab]	33.00 ± 0.00[ac]
Lym	57.50 ± 2.40[a]	59.25 ± 2.17[a]	59.75 ± 1.75[a]
Neut	43.50 ± 3.77[a]	40.75 ± 2.17[a]	40.75 ± 2.14[a]
ESR	1.00 ± 0.00	2.75 ± 0.63	4.00 ± 0.41

Means with the same superscripts are not significantly different at (P> 0.05) level of significance along rows.

It was observed that the RBC value was increasing as the treatment increases, though the differences were not significant (P> 0.05). The mean difference for PCV, Hb, Platelets, MCH, MCHC, Lmphocytes and Neutrophils were also not significant (P> 0.05).

The WBC value increases from control (14.85 ± 1.58) to (22.67 ± 1.02) after 1st week of treatment but decreased to (11. 85 ± 0.39) after 2ndweek of treatment and the differences between them were significant (P< 0.05), but no significant difference between the control and 2nd week.

The ESR was increasing as the week of treatment increases. The difference between control (1.00 ± 0.00) and 1st week after treatment (2.75 ± 0.63) was significant (P<0.05) and also between the control and 2nd week of treatment (4.00 ± 0.41), but there was no significant difference (P>0.05) between the 1st week and 2nd week after treatment.

DISCUSSION

The analysis of the spermiogram of the WAD Goats in this study shows that the administration of the aqueous extract of *Cnidoscolus aconitifolius* at both 20% and 30% for a period of two weeks caused a slight reduction (P>0.05) in the percentage motility. This is an indication that a continuous treatment of the extract beyond one week may reduce the percentage motility of the sperm cells which may reduce the fertilizing capacity of the spermatozoa with respect to fertilization. This is similar to that of Aloe vera treated bucks (Ajayi, 2009).

The mean concentration of semen was decreasing as the week of treatment increases for both groups though the differences between them were not significant (P>0.05). This may also pose a risk to the fertility of bucks.

Though the morphological abnormalities of the sperm cells were observed to be within the normal percentage (10%) reported by Recce, (1997), the mild effect seen in the sperm picture

may be connected to the duration of the study (14 days) in which the Aqueous extract of *Cnidoscolus aconitifolius* was administered to the bucks. The total percentage morphological abnormalities observed were increasing as the week post treatment increases. This indicated that long period of use of the extract will cause high percentage of abnormalities.

The blood analysis result obtained for the haemogram are within the normal range of value in the goat and there was no significant difference ($P>0.05$) between the blood parameters except that of white blood cells (WBC) for group treated with 20% extract, Control (WBC, 22.80 ± 1.75), 2nd week after treatment (12.50 ± 1.39) and (11.85 ± 0.39) for group treated with 30% extract. This indicated that an increase in *Cnidoscolus aconitifolius* extract administration beyond a week (7 days) causes a decrease in white blood cells count.
There was a progressive increase in the ESR as the week post treatment increases in both groups treated with 20% and 30%, although the increase was not significant ($P>0.05$).
It can therefore be said that prolonged administration of Chaya extract may cause a slight increase in ESR which indicate that there may be damage to reproductive tissues, resulting in inflammation.

CONCLUSION

This study concludes that the use of 20% or 30% aqueous extract of *Cnidoscolus aconitifolius* for a period of 14 days has no significant effect ($P>0.05$) on the semen characteristics and haematological parameters of West African Dwarf bucks. However, it led to a slight increase ($P>0.05$) in the number of abnormal sperm cells as the week post treatment increases, therefore, prolonged feeding of *Cnidoscolus aconitifolius* should be discouraged.

REFERENCES

AJAYI, T.A. (2009). Fertility potentials of West African Dwarf bucks treated with aloe vera extract. DVM project, University of Ibadan. Pg 74.

AKUSU, M.O. (2003). Reproductive performance of goats for maximum animal production in Nigeria, Sibon books ltd. Ibadan.

BOOTH, S., BRESSANI, R and JOHN, T (1992). Nutrient content of selected indigenous leafy vegetable consumed by Kekchi people of Alta verapaz, guatamela j. Food Compos. Anal 5.25-34

GRUBBEN, G.J.H. (1978): Tropical vegetables and their genetic resources. Int. Board plant genetic resources, Fao-Un, Rome Italy.

MARTIN, F.W. and RUBERTE, R (1978). Chaya, *Cnidoscolius aconitifolius* includes composition and nutrition value, culture in Puerto Rico. In vegetable of Hoit humid tropics. USDA, Ars. New Orlkleands, La.

MCVAUGH, R. (1944). The genus *Cnidoscolius:* Generic limits and intrageneric groups, Bul. Torrey bot club 71:457-474

MUNSELL, R (1949). Composition of food plants of central America food. Res. 14:144-164, National Reseach council 1989, diet and health. National Academy press, Washington, NRC, National research council 1981 nutrient requirements of goats. Washington DC. National Academic Press.

OYAGBEMI, A.A. and ODETOLA, A. (2008). Ameliorative effects of *Cnidoscolus aconitifolius* on anaemia and osmotic fragility induced by protein energy malnutrition. African Journal of Biotechnology; 7(11):1721–1726.

OYEYEMI, M.O. and AJALA, O .O. (1997) Effect of cross-breeding on the reproductive performance of West African dwarf goat. Proceedings of the 34th annual national congress, Osogbo, Nigeria, Oct. 27-31, 1997, Pp. 94-98.

OYEYEMI, M. O. (2002). The effect of nutrition, different estrus synchronizing agents and management strategies on reproductive performance of WAD Goats. A thesis in the Department of Veterinary Surgery and Reproduction., University of Ibadan, Nigeria.

OYEYEMI, M. O. and AKUSU M. O(1998). Reproduction performance of West African Dwarf goat in humid tropical environment of Ibadan 1998. Bull animal health production African. 46, Pg. 59-61.

OYEYEMI, M. O. AJALA O. O., AKUSU M. O., AGBESOLA O. O. (1998): The effect of starvation on semen characteristics of West African dwarf bucks in the Nigerian livestock industry in the 21st Century. Proc. of 3rd Annual Conference of animal Science Association of Nigeria.Sept. 22nd-24th. Pg. 128-130..

OYEYEMI, M. O. and AKUSU M. O. (1996); Effect of frequent ejaculation on the semen characteristics of West African dwarf bucks. Trop. Vet. 14; 71-75.

REECE W. O. (1997); Physiology of domestic animals. 2nd Ed. Williams and Wilkins Pg 124, 149, 345-368.

SISSON S. AND GROSSMAN J. D. (1975): Anatomy of the domestic animals 5th Ed. W. B. Saunders, Philadephia.

ZEMJAMIS, R. (1997); Diagnostic and therapeutic technique in animal reproduction. Williams and Wilkins. Pp 139 -154. 2nd Ed.