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Semen Quality and Reproductive Morphometry of Two Breeds of Cocks Fed Ficus Exasperate Leaf Meal and Vitamin C Supplemented Diets

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Abstract:
The assessment of semen quality and reproductive morphometry of two breeds of cocks is based on the evaluation of sperm, the testicular and epididymal morphometry from the breeds of cocks. Two breeds of cocks (Noiler and Rhode Island Red) fed Ficus exasperata leaf meal and vitamin C supplemented diets were evaluated for the semen quality and reproductive morphometry. One hundred and forty-four birds were used for the experiment. The cocks were weighed randomly and assigned to four dietary treatments of six replicates with three cocks per replicate. The birds were fed their respective experimental diet for 12weeks, while feed and water were provided ad-libitum. The experiment was carried out using Factorial Design or a Statistical Experimental Design. The diets were divided into four treatments which the diet 1 was the control (basal diet), the diet 2 consists of 200mg/kg and vitamin C supplement, the diet 3 consists of Ficus exasperata and 1kg of basal diet and the diet 4 consists of 200mg/kg vitamin C with Ficus exasperata and 1kg of basal diet. The result showed that there is no significant (p>0.05) different in the semen characteristics except the total sperm cell. It was thus concluded that Ficus exasperata leaf meal and vitamin C could be used in the diet without adverse effect on the quality of semen and reproductive morphology and function.

Keywords: Breeds; semen, morphometry, cocks, ficus exasperata, vitamin C.

I. INTRODUCTION

Medicinal herbs have played major roles in the treatment of various diseases in humans and animals which may serves as public health hazard that has been linked to stress. Environmental, nutritional, microbiological and management factors are major limiting challenges to poultry production in attaining its full potential, and oxidative stress is a consequence of all these stresses (Mishra and Jha, 2019). Testes are the male reproductive organs that have two primary functions: testosterone synthesis and sperm production. These functions are critical not just for the conservation of male traits, but also for the conservation of species (Lara et al., 2018).

Several scientific reports on testes is valid. Kumaran and Turner (2005) practiced the normal development of testes among white plymouth rock(WPR) chickens to maturity, both morphologically and histologically (Kumaran et al., 2011).

In mammals, a specialized region similar to epididymis participates on sperm cell nutrition and maturation processes. Thesperm storage tubules (SST) have been found in the hen reproductive tract and are located at the utero-vaginal junction in the oviduct (Holt, 2011; Sasanamiet al., 2012). The Cock sperm cells are able to survive between two and fifteen weeks in the sperm storage tubules (Bakst, 2011).

Semen quality is a pre-requisite for the acrosome reaction in mammalian sperm in order to attain their fertilizing ability (Jones et al., 2007). However, it is not clear if a quality process similar to that in mammals is needed before the cock sperm cells attain their fertilizing ability (Ahammad et al., 2011).

During the last decades, herbs and spices have been used in culinary and traditional therapeutic practices for the treatment of different ailments. Among the plant species that has been ethno-botanically reported to have diverse medicinal uses is Ficusexasperata (Lawalet al., 2012). Ficus. exasperata is one of the Ficus species of Moraceae family globally referred to as “fig plant”. It is suggested that the protective effect of fruits and vegetables is partly due to antioxidant nutrients such as vitamin C and carotenoids which inhibit lipid per oxidation and oxidative cell damage (Lobo et al., 2010). Vitamin C is a water-soluble vitamin that exists in the body primarily in its reduced form, ascorbic acid. The oxidized from of the vitamin, dehydroascorbic acid (DHA), also has antiscorbutic (scurvy preventive) activity because it is easily reduced intracellularly to ascorbic acid. The vitamin’s ability to provide electron and can be readily converted to its reduced form by glutathione describe its exact effectiveness as an invivo antioxidant (Kazmierczak et al., 2020)

At present, phytochemicals are being proposed as a replacement for antibiotic growth improvement and also an

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anabolic compound that can increase the performance of the animals (Devi et al., 2015). The effect of Ficus exasperate and and vitamin C supplement cannot be overemphasize. The nutrients available can be used for the treatment of inflammatory disorder and can also increase the performance of the animal (Igoliet al., 2005).

II. MATERIALS AND METHODS

STUDY AREA

The research was carried out at the School of Agriculture and Agricultural Technology Teaching and Research Farm, The Federal Polytechnic, Ado Ekiti, Ekiti State. The experimental site has mean annual rainfall of 1247 mm and mean annual temperature of 26.2 °C and was situated at 437 mm above sea level; latitudes of 7° 37′ N and 7° 12′ N and longitudes of 5° 11′ E and 5° 31′ E as reported by (Oloruntola et al., 2016).

PREPARATION OF LEAF MEAL

Fresh leaves of the sandpaper (Ficusexasperata)were harvested from their mother plants within the premises of the Federal Polytechnic, Ado Ekiti, Ekiti State. These leaves were chopped and air-dried under the shed to prevent loss of vital nutrients. The air-dried leaves were milled with a hammer mill to produce leaf meals, labeled and stored in a container and kept in a cool dry place until used.

Proximate composition and phytochemical constituents of the leaf meals (LMs) were determined using standard procedures. The proximate chemical composition was determined by the procedure described by AOAC (1990). Phenol (Ignatet al., 2013), flavonoids (Bohm and Kocipal-Abyazan, 1994), saponin (Brunner, 1984), terpenoids (Sofowora 1993), 2, 2-diphenyl-1-picrylhydrazy hydrate (Gyamfiet al., 1999) and ferric-reducing antioxidant property (Pulido et al. 2002) were also determined.

VITAMIN C SUPPLEMENT AND EXPERIMENTAL DIETS.

The vitamin C supplement used was procured from pharmaceutical shops. A basal diet (Table 1) will be formulated to meet the NRC (1994) requirement for cocks.

Thereafter, this diet was divided into eight equal portions and labeled diets 1 to 4 and described as follows:

i. Diet 1: control (basal diet)
ii. Diet 2: 200 mg/kg vitamin C supplementation
iii. Diet 3: 1.0g *Ficusexasperata* /1kg of basal diet
iv. Diet 4: 200mg/kg vitamin C + 1.0 g *Ficusexasperata* /1kg of basal diet

TABLE 1. COMPOSITION OF BASAL DIETS FOR COCK

Ingredients	Cock's basal diet
Maize	45.00
Soy bean meal	4.00
Groundnut cake	8.50
Wheat offals	29.25
Palm kernel cake	7.00
Di-calcium phosphate	1.50
Fish meal	0.50
Limestone	1.50
Lysine	0.12
Methionine	0.15
Salt	0.50
Premix	0.48
Vegetable oil	1.50
Total	100.00
Calculated nutrients	
Metabolizable energy (kcal/kg)	2554.07
Crude protein	16.07
Crude fibre	1.10
Methionine	0.51
Lysine	0.71
Calcium	1.18
Av. Phosphorus	0.40

ORGAN, TESTICULAR AND EPIDIDYMAL MORPHOMETRIC

The birds were humanely sacrificed through cervical dislocation and eviscerated for gross examination of organs *in situ*. Their reproductive systems were carefully dissected, organs like the liver, kidney, spleen, heart, adrenal gland, pancreas, lung and gastro-intestinal tract were excised and the testes and epididymes carefully collected, trimmed off adhering tissues and weighed using a sensitive electronic balance. Testicular and epididymal morphometric characteristics: testis length, testis width, testis volume and epididymal length were also measured. The testis length, testis width and epididymal length were measured with the aid of a pair of compass while the testis volume was measured by water displacement according to Archimedes principle (Adu and Egbunike, 2010). Paired and mean testicular and epididymal parameters were computed from data for left and right testes and epididymis.

DETERMINATION OF DAILY SPERM PRODUCTION

Homogenate Method

The portion of the right testes was weighed as well as the left testes and epididymides. The right testes, the left testes and the different part of epididymides (caput, corpus, cauda) was homogenized separately in 0.154M NaCl (physiological saline) at the rate of 5ml/g testis. The suspensions was mixed and filtered through a double layer of sterile gauze into clean glass test tubes and the sperm concentrations therein determined by direct haemocytometric count after proper dilution (1:20 v/v) in 0.154M NaCl (Igboeli and Rakha, 1971, Egbunikeet al., 1975).The daily sperm production was estimated from the testicular sperm reserves. The estimation of daily sperm production from testicular homogenates was based on the fact that the nuclei of elongated spermatids are

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resistant to physical destruction at some point during spermatogenesis. The DSP was therefore calculated with the formula proposed by Amann (1970):

$$DSP = \frac{Testicular\ sperm\ count}{\text{Time divisor (1.93)}} \quad (1)$$

Sperm Morphology Test

For the evaluation of the sperm morphology, the filtrate obtained as described above in sperm count analysis were stained with 1% eosin yellow and morphological defects were analyzed as explained by Pizziet al (1977). The sperms of the smears were visualized under 40× or oil immersion objective and abnormalities of either heads or tails were noted. The microcephaly (head abnormality) and cephalo-caudal junction defects (tail defects) were classified separately.

STATISTICAL ANALYSIS

Data collected were subjected to 3 factors (Breed, Vitamin C and Ficus exasperata) statistical analysis in 2 by 2 by 4 factorial procedures of SAS (2008). Where the analysis of variance indicated significant treatment effect, the means were compared using Duncan Multiple Range Test.

III. RESULTS

The result of relative organ weights of Noiler and Rhodes chickens fed Ficus exasperate and Vitamin C supplementations presented in Table 2 revealed that there was no significant breed (p>0.05) effect on all the parameters measured except for the final weight gain (p<0.01) . However, Rhodes chicken recorded higher values for final weight (3114.08 vs. 2990.58g/kg), pancreas (2.78 vs. 2.76g/kg), gizzard (36.17 vs. 35.34 g/kg) and proventriculus (6.56 vs. 6.25 g/kg).

TABLE 2: RELATIVE ORGAN CHARACTERISTICS OF NOILER AND RHODES CHICKENS FED FICUS EXASPERATALEAF MEAL AND VITAMIN C SUPPLEMENTATIONS.

	Breed	Supplements	FinalWt (g/kg)	Heart (g/kg)	Pancrease(g/kg)	Gizzard (g/kg)	Spleen (g/kg)	Liver (g/kg)	Prov. (g/kg)
Breed Effects	Noiler		2990.58[b]	11.35	2.76	35.34	4.03	34.03	6.25
	Rhode		3114.08[a]	11.20	2.78	36.17	3.76	26.50	6.56
	± SEM		27.49	0.31	0.13	1.42	0.21	5.25	0.17
	P-value		**0.01***	**0.74**	**0.93**	**0.69**	**0.37**	**0.33**	**0.22**
Supplement Effects on the Organs		Control	3031.33[b]	11.17	3.02	37.52	4.70[a]	43.23	6.43
		FELM	3042.17[b]	11.48	2.50	34.15	3.20[b]	25.67	6.48
		Vit C	3274.17[a]	11.43	2.73	35.68	4.07[ab]	25.63	6.22
		FELM +Vit C	2861.67[c]	11.02	2.82	35.67	3.62[b]	26.53	6.48
		± SEM	38.89	0.44	0.18	2.01	0.30	7.42	0.24
		P-value	**<0.01*****	**0.86**	**0.26**	**0.71**	**0.02***	**0.29**	**0.84**
Breed * Supplement	**Noiler**	Control	2944.00	11.37	2.90	33.43[b]	5.10	58.50	5.57[c]
		FELM	3102.00	11.07	2.50	29.73[c]	2.93	25.10	5.67[c]
		Vit C	3339.33	12.00	2.50	36.60[b]	3.80	24.57	6.47[b]
		FELM +Vit C	2577.00	10.97	3.13	41.60[a]	4.30	27.97	7.30[a]
	Rhode	Control	3118.67	10.97	3.13	41.60[a]	4.30	27.97	7.30[a]
		FELM	2982.33	11.90	2.50	38.57[b]	3.47	26.23	7.30[a]
		Vit C	3209.00	10.87	2.97	34.77[b]	4.33	26.70	5.97[b]
		FELM +Vit C	3146.33	11.07	2.50	29.73[c]	2.93	25.10	5.67[b]
		± SEM	54.99	0.63	0.25	2.84	0.42	10.49	0.34
		P-value	**<0.01*****	**0.48**	**0.19**	**0.01***	**0.09**	**0.38**	**<0.01*****

Means in the row having different superscripts are significantly different (p<0.05; p<0.01).

TABLE 3a: REPRODUCTIVE MORPHOMETRY OF NOILER AND RHODES CHICKENS FED *FICUS EXASPERATE* LEAF MEAL AND VITAMIN C SUPPLEMENTATIONS

	Breed	Supplements	RTestesW (cm)	RTestesV (cm)	LTestesW (cm)	LTestesV (cm)	LEpiW (cm)	REpiW (cm)
Breed Effects	Noiler		15.18	17.17	13.03	15.75	1.15	1.19
	Rhode		14.78	18.00	13.25	16.92	0.98	1.03
	± SEM		1.06	1.20	1.10	1.24	0.08	0.10
	P-value		**0.79**	**0.63**	**0.89**	**0.52**	**0.15**	**0.27**
Supplement Effect on the Testes		Control	14.87	17.67	13.58	17.00	0.92	0.87
		FELM	15.20	15.67	12.73	13.50	1.07	1.28
		Vit C	14.08	18.17	12.74	17.67	1.05	0.95
		FELM+Vit C	15.78	18.83	13.50	17.17	1.23	1.33
		± SEM	1.50	1.70	1.56	1.75	0.11	0.15
		P-value	**0.88**	**0.60**	**0.97**	**0.35**	**0.28**	**0.09**
Breed * Supplement	**Noiler**	Control	15.97	18.67	13.67	17.67	1.17	0.90
		FELM	14.20	13.33	12.43	12.00	1.17	1.40
		Vit C	13.37	17.67	11.97	17.33	1.10	1.10
		FELM+Vit C	17.20	19.00	14.03	16.00	1.17	1.37
	Rhode	Control	13.77	16.67	13.50	16.33	0.67	0.83
		FELM	16.20	18.00	13.03	15.00	0.97	1.17
		Vit C	14.80	18.67	13.50	18.00	1.00	0.80
		FELM+Vit C	14.37	18.67	12.97	18.33	1.30	1.30
		± SEM	2.13	2.40	2.21	2.48	0.16	0.21
		P-value	**0.58**	**0.57**	**0.94**	**0.82**	**0.27**	**0.92**

RTestesW = Right Testes Weight; RTestesV = Right Testes Volume; LTestesW = Left Testes Weight; LTestesV = Left Testes Volume; LEpiW = Left Epididymis Weight; REpiW = Right Epididymis Weight

TABLE 3b: REPRODUCTIVE MORPHOMETRY OF NOILER AND RHODES CHICKENS FED *FICUS EXASPERATE* LEAF MEAL AND VITAMIN C SUPPLEMENTATIONS

	Breed	Supplements	LEpiH (cm)	LEpiBody (cm)	LEpiTail (cm)	REpiHead (cm)	REpiBody (cm)	REpiTail (cm)
Breed Effects	Noiler		0.55	0.40	0.30	0.65	0.38	0.22
	Rhode		0.48	0.33	0.28	0.52	0.34	0.22
	± SEM		0.04	0.03	0.02	0.08	0.04	0.02
	P-value		**0.23**	**0.16**	**0.33**	**0.23**	**0.58**	**1.00**
Supplement Effects on the Epididymis		Control	0.42	0.30^{b}	0.20^{c}	0.37^{b}	0.28^{b}	0.22
		FELM	0.52	0.37^{ab}	0.18^{c}	0.67^{ab}	0.38^{ab}	0.23
		Vit C	0.47	0.30^{b}	0.28^{b}	0.48^{b}	0.27^{b}	0.20
		FELM +Vit C	0.65	0.50^{a}	0.48^{a}	0.82^{a}	0.50^{a}	0.22
		± SEM	0.06	0.05	0.03	0.11	0.06	0.02
		P-value	**0.07**	**0.02***	**<0.01***	**0.04***	**0.04***	**0.77**
Breed * Supplement	**Noiler**	Control	0.47	0.40	0.30^{c}	0.43	0.27	0.20
		FELM	0.63	0.40	0.13^{c}	0.73	0.43	0.23
		Vit C	0.50	0.27	0.33^{b}	0.63	0.27	0.20
		FELM +Vit C	0.60	0.53	0.43^{a}	0.80	0.53	0.23
	Rhode	Control	0.37	0.20	0.10^{c}	0.30	0.30	0.23
		FELM	0.40	0.33	0.23^{b}	0.60	0.33	0.23
		Vit C	0.43	0.33	0.23^{b}	0.33	0.27	0.20
		FELM +Vit C	0.70	0.47	0.53^{a}	0.83	0.47	0.20
		± SEM	0.09	0.06	0.04	0.15	0.08	0.03
		P-value	**0.31**	**0.26**	**0.01****	**0.75**	**0.85**	**0.77**

** Significant at 1%; * = Significatn at 5%; LEpiH = Left Epidedimis Head; LEpiBody = Left Epidedimis Body; LEpiTail = Left Epidedimis Tail; REpiH = Right Epidedimis Head; REpiBody = Right Epidedimis Body; REpiTail = Right Epidedimis Tail
Means in the row having different superscripts are significantly different ($p<0.05$; $p<0.01$)

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TABLE 4: TESTICULAR SPERM RESERVE OF NOILER AND RHODES CHICKENS FED FICUS EXASPERATE LEAF MEAL AND VITAMIN C SUPPLEMENTATIONS

	Breed	Supplements	RTSR/T (× 10^9)	RTSR/gT (× 10^8)	LTSR/T (× 10^9)	LTSR/gT (× 10^8)	PTSR/T (× 10^9)	PTSR/gT (× 10^8)	DSP (×10^9)	SPE (×10^6)
Breed Effects	Noiler		1.01	0.76	1.06	0.77	1.98	1.53	1.02	79.22
	Rhode		1.01	0.73	1.12	0.84	2.09	1.58	1.08	81.68
	SEM		0.05	0.05	0.09	0.05	0.05	0.04	0.03	2.06
	P-value		**0.96**	**0.74**	**0.67**	**0.28**	**0.11**	**0.41**	**0.11**	**0.41**
Supplement Effects on Testicular Sperm Reserve		Control	1.03	0.77	1.01	0.80	2.04	1.58	1.06	81.64
		FELM	0.95	0.69	0.98	0.76	1.94	1.45	1.01	75.10
		Vit C	0.99	0.73	1.20	0.79	1.98	1.52	1.03	78.83
		FELM + Vit C	1.06	0.79	1.17	0.88	2.17	1.67	1.12	86.23
		SEM	0.07	0.07	0.13	0.07	0.07	0.06	0.04	2.91
		P-value	**0.66**	**0.77**	**0.53**	**0.60**	**0.14**	**0.09**	**0.13**	**0.09**
Breed * Supplement	**Noiler**	Control	1.02	0.75	1.02	0.80	2.04	1.55	1.06	80.35
		FELM	1.01	0.75	0.94	0.75	1.96	1.50	1.02	77.90
		Vit C	0.94	0.70	1.33	0.69	1.75	1.39	0.91	71.92
		FELM+Vit C	1.06	0.83	0.95	0.85	2.15	1.67	1.11	86.70
	Rhode	Control	1.04	0.79	1.00	0.81	2.04	1.60	1.06	82.94
		Exasperata	0.90	0.64	1.02	0.76	1.92	1.39	0.99	72.29
		Vit C	1.04	0.76	1.07	0.90	2.22	1.66	1.15	85.74
		FELM+Vit C	1.06	0.74	1.38	0.91	2.18	1.66	1.13	85.76
		± SEM	0.09	0.10	0.18	0.09	0.10	0.08	0.05	4.12
		P-value	**0.71**	**0.75**	**0.32**	**0.67**	**0.05**	**0.15**	**0.06**	**0.15**

DSP = Daily Sperm production; SPE = Sperm cell per Ejaculate; RTSR/T = Right Testes Semen Reserve per Testes; RTSR/gT = Right Testes Semen Reserve per gram Testes; LTSR/T = Left Testes Semen Reserve per Testes; LTSR/gT = Left Testes Semen Reserve per gram Testes.

TABLE 5: SEMEN CHARACTERISTICS OF NOILER AND RHODES CHICKENS FED FICUSEXASPERATE LEAF MEALAND VITAMIN C SUPPLEMENTATIONS

	Breed	Supplements	EV (ml)	SM (%)	SV (%)	SC (×10^9/ml)	TSC/E (×10^8)	TLC (×10^9/ml)	TMC
Breed Effects	Noiler		0.48	73.87	85.94	2.43	2.95^a	2.43	2.01
	Rhode		0.43	77.76	86.43	2.29	2.34^b	2.31	2.15
	± SEM		0.03	4.70	4.38	0.31	0.18	0.28	0.27
	P-value		**0.26**	**0.57**	**0.94**	**0.75**	**0.03***	**0.76**	**0.71**
Supplement Effects on the Semen		Control	0.48	80.82	92.42	2.38	3.02	2.24	1.82
		FELM	0.45	64.76	78.95	1.99	2.83	2.04	1.60
		Vit C	0.43	78.35	88.27	2.61	2.31	2.76	2.62
		FELM +Vit C	0.46	79.32	85.08	2.46	2.42	2.44	2.26
		± SEM	0.05	6.64	6.19	0.44	0.25	0.40	0.38
		P-value	**0.87**	**0.32**	**0.49**	**0.78**	**0.21**	**0.63**	**0.27**
Breed * Supplement	**Noiler**	Control	0.53	74.76	88.60	2.34	3.39	2.15	1.64
		FELM	0.50	59.31	77.44	1.75	3.48	2.03	1.16
		Vit C	0.46	86.43	96.22	3.44	2.37	3.30	3.37
		FELM +Vit C	0.44	74.99	81.48	2.21	2.56	2.23	1.85
	Rhode	Control	0.43	86.89	96.24	2.43	2.64	2.32	1.99
		FELM	0.40	70.22	80.47	2.24	2.18	2.05	2.05
		Vit C	0.39	70.26	80.32	1.78	2.26	2.22	1.87
		FELM +Vit C	0.49	83.65	88.68	2.71	2.29	2.64	2.67
		± SEM	0.07	9.39	8.76	0.62	0.36	0.56	0.54
		P-value	**0.60**	**0.41**	**0.51**	**0.28**	**0.38**	**0.57**	**0.13**

* = significant; EV = Ejaculate Volume; SM = Sperm Motility; SV = Seminal Volume; SC = Sperm Concentration; TSC/E = Total Sperm Cell per Ejaculate; TLC = Total Live Sperm Cell; TMC = Total Motile Cells.
Means in the same row having different superscripts are significantly different ($p<0.05$; $p<0.01$).

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IV. DISCUSSION

RELATIVE ORGAN CHARACTERISTICS OF NOILER AND RHODES CHICKEN FED FICUSEXASPERATE LEAF MEALAND VITAMIN C SUPPLEMENTATIONS

Several factors, including genetic influences and nutritional pathways, have an impact on carcass quality, and more specifically dressing percentage (Marcinčáket al., 2011). The observed difference in the final weights between Noiler and Rhode may be caused by genetic differences between the two breeds. This finding was consistent with that of Abdullah et al. (2010), who discovered higher final weights in some broiler chicken breeds than in others under investigation. Additionally, the lower final weight that was seen as a result of the Ficus exasperata supplementation was consistent with an earlier study by Marcinčáket al. (2011) that detailed inferior broiler chicken performance as a result of the addition of Camellia leaves. This study of the Ficus exasperate suggests that the bioactive compound profiles of Ficus exasperata support the development of the visceral organs, head and gastrointestinal system more than the edible parts of broiler chickens. Sometimes phyto-supplements have antioxidant effects that modify how some tissues or target tissues develop (Valenzuela-Grijalvaet al. 2017). Additionally, the components of animals' diets can occasionally cause changes in the weight of their internal organs (Oloruntolaet al. 2021). This could account for the variations in the relative weights of the broiler chickens' gizzard, heart, lungs and proventriculus that are caused by nutritional interventions.

REPRODUCTIVE MORPHOMETRY OF NOILER AND RHODES CHICKEN FED FICUSEXASPERATE LEAF MEALAND VITAMIN C SUPPLEMENTATIONS

Parameters, such as weight, length and volume of the testis and the epididymis are crucial in evaluating the breeding soundness of domestic animals (Olarotimi and Adu, 2020) because of their direct relationships with the sperm production abilities of the testes (Nosseiret al., 2012).

The non-significant main effects of the experimental diets in the present study indicated that the testicular and epididymal characteristics of the cocks were not negatively affected. Whereas, the significant increase observed in the left epididymal head and right epididymal head; and left epididymal body and right epididymal body of both the Rhode cocks and Noiler Cocks (NC) fed diets supplemented with Ficus. exasperata and Vitamin C had a positive effect on spermatogic activities and storage capacities of the two breeds of the cocks.

TESTICULAR SPERM RESERVE OF NOILER AND RHODES CHICKEN FED FICUSEXASPERATE LEAF MEALAND VITAMIN C SUPPLEMENTATIONS

All parameters measured for testicular sperm reserve was not significantly influenced by breed and supplement effect. This implies that the addition of Vitamin C, Ficus exasperata and their combination did not alter the sperm reserve in both the Noiler and Rhodes Island Red breed of chicken.

SEMEN CHARACTERISTICS OF NOILER AND RHODES CHICKEN FED FICUSEXASPERATE LEAF MEALAND VITAMIN C SUPPLEMENTATIONS

The reduction in the EV, SM, SV, SC, TSC/E, TLC and TMC of the cocks fed Ficus exasperata diet without vitamin C was a testimony to the fact that high inclusion of Ficus exasperata without vitamin C could be deleterious to the processes of both steroidogenesis and spermatogenesis since they both take place in the testes. To further support the fact that high inclusion of Ficus exasperata actually had an interference with spermatogenesis, the reduction in testicular and epididymal weight in this study was evidence as decrease in epididymal weight directly related to reduce sperm counts (Henkel and Agarwal, 2020).

V. CONCLUSION

Ficus exasperata was effective in enhancing the development of visceral organs, head and gastrointestinal system. The use of Vitamin C and Ficus exasperate improved the morphometry of the chickens. Also, the Noiler breed performed better in terms of total sperm cell production.

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