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PUBERTAL HORMONES AND REPRODUCTIVE PERFORMANCE OF RABBIT DOES FED DIETS SUPPLEMENTED WITH AFRICAN PEAR LEAF MEAL

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Abstract

This study evaluated the effect of dietary supplementation with sun-dried African pear (*Dacryodes edulis*) leaf meal (APLM) on the pubertal hormone profile and reproductive performance of female rabbits. Forty-five weaned rabbits (thirty females and fifteen males) with a mean initial body weight (514.67 ± 17.29 g) were randomly allocated to five dietary treatments: T1 (0 g/kg APLM), T2 (2.50 g/kg), T3 (5.00 g/kg), T4 (7.50 g/kg), and T5 (10.00 g/kg), with each replicate comprising two females and one male used solely for mating. The 27-weeks feeding trial data were analyzed using one-way ANOVA, and significant means were separated with Duncan's multiple range test (DMRT). Results revealed that pubertal males fed 2.5 g/kg and 10.0g/kg APLM supplemented diets had significantly ($p<0.001$) higher serum testosterone levels (12.20 and 12.40 nmol/L) respectively. Results revealed that pubertal females fed 7.50 g/kg APLM supplemented diets had significantly ($p<0.001$) higher serum estradiol levels (31.30 pg/mL), whereas those fed 10.00 g/kg APLM exhibited the highest follicle-stimulating hormone (16.00 mIU/mL) and luteinizing hormone (20.10 U/L) levels, respectively. Reproductive performance was notably improved in female rabbits fed 7.50 g/kg APLM, with the shortest gestation length (28.50 days) and the highest average litter weights at birth (41.17g) and (338.05g) as well as average litter size at weaning (6.00). Increasing supplementation to 10.00 g/kg, despite raising FSH and LH levels, did not further enhance reproductive outcomes. These findings demonstrated that dietary supplementation of APLM at 7.50 g/kg optimally supported pubertal hormonal balance and reproductive performance in male and female rabbits and is therefore recommended.

Keywords: African pear leaf, bucks, does, hormone profile, reproductive performance

Introduction

Rabbits are small mammals in the family Leporidae and order Lagomorpha which are reared in cages, hutches or deep litter for meat and wool and classified as pseudo-ruminants due to their capacity to digest fibre in the hindgut (Ibrahim *et al*., 2017). They have high reproductive potentials,

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short generation interval, rapid growth, and efficient feed conversion ratio (Sam *et al*., 2020; Christopher *et al.,* 2022). They can attain market weight within 8–12 weeks, making them attractive to small-scale farmers seeking quick returns on investment. Globally, rabbit production has become an important contributor to meeting the increasing animal protein supply, particularly in countries where conventional livestock such as cattle, sheep, and goats are limited by space, feed, and environmental constraints (Evans and Ozung, 2020; Sam *et al*., 2020).

African pear (*Dacryodes edulis*) is an evergreen perennial fruit tree which belongs to the family Burseraceae. It is native to countries in Central and West Africa and produces edible fruits (Makoute and Lekange, 2021). Reports by Miguel *et al*. (2017) and Christopher (2025) indicate that the leaves, bark, roots and seeds of plants as well as that of African pear are useful medicinally for the treatment of aliments like wounds, skin diseases, dysentery and fever. African pear leaves are good sources of protein, fibre, carbohydrates, essential minerals like nitrogen, potassium, calcium and magnesium as well as beneficial bioactive compounds like saponins, flavonoids and polyphenol (Udombon *et al.,* 2025). This suggests that it has the potential to improve the physiological status and overall productivity of rabbits. The efficiency of animal production and reproductive performance is influenced, among other factors, by nutrition (Christopher *et al*., 2022; Evans *et al.,* 2025; Evans *et al.,* 2026). The link between performance and reproduction cannot be overemphasized as adequate nutrition plays a key role in maintaining reproductive efficiency of farm animals (Evans *et al*., 2022; Christopher *et al*., 2025).

This is because nutrition provides the essential energy and materials for reproductive hormone production, release, and signaling as well overall reproductive performance of rabbits. A well-balanced diet ensures that hormonal processes function optimally, leading to better overall reproductive performance. Testosterone, Estradiol, follicle-stimulating hormone (FSH), and luteinizing hormone (LH) are key reproductive hormones that regulate puberty and fertility in male and female rabbits respectively. Testosterone is the primary sex hormone that controls spermatogenesis, libido and secondary sexual characteristics (Smith, 2022). Estradiol promotes follicular development and estrous behaviour, while FSH stimulates ovarian follicle growth and LH triggers ovulation and corpus luteum formation (Kumcu *et al.,* 2024). Pubertal hormonal profile and reproductive performance of rabbits can be improved by the dietary supplementation of leaf meals with nutritionally beneficial components. Rabbit farmers are faced with the challenge of finding natural, readily available, cost-effective alternatives to synthetic supplements to improve reproductive performance of their stock. Furthermore, there is limited information on the nutritional potential of African pear leaf meal supplementation to improve pubertal hormonal profile and reproductive performance in rabbits. Therefore, this study investigated the pubertal hormone profile

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and reproductive performance of rabbits fed varying supplementation levels of African pear leaf meal.

Materials and methods

Location of the Study

This study was carried out at the Rabbitry Unit, Department of Animal Science Teaching and Research Farm, Akwa Ibom State University, Obio Akpa Campus, Akwa Ibom State, Nigeria. Obio Akpa is situated between Latitude $5^0 17^I$N and $5^0 27^I$N of the equator and longitude $7^0 21^I$E and $7^0 58^I$E of the Greenwich Meridien. Its annual rainfall ranges between 3500 and 5000 mm; monthly temperature ranges between 24^0 and 26^0C, and relative humidity ranges between 60 and 90% (AKSG, 2024).

Source and preparation of African Pear leaf meal

Fresh African pear leaves were harvested from the trees within Obio Akpa Community, Oruk Anam Local Government Area, Akwa Ibom State, Nigeria. The leaves were washed in clean tap water to remove dirt and drained. The harvested leaves were chopped into small pieces and sun-dried for five days. After drying, the leaves were milled using an electric blender (Kenwood, United Kingdom). A portion was obtained for proximate analysis, while the remaining material was coarsely ground into particles of approximately 5mm sieve size for rabbit feeding. The milled African pear leaf meal was stored in clean, airtight plastic containers prior to laboratory analysis and dietary incorporation.

Experimental Diet

Five experimental diets were formulated to meet the nutrient requirements of rabbits. (Table 1) The supplementation levels of sun-dried African pear leaf meal in the diets were; 0, 2.50, 5.00, T7.50 and 10.00 g/kg respectively for five dietary treatments T1, (control), T2, T3, T4 and T5, respectively

Experimental design, animals and management

A total of forty – five (45) mixed breeds weaned rabbits of both sexes, 6 - 8 weeks old with average initial body weight (514.67±17.29 g) were used in this study. The experiment was set up in a Completely Randomized Design (CRD), with five treatments of nine rabbits each and three replicates with three rabbits per replicate (one male and two females) after balancing for body weight. The rabbits were sourced from reputable rabbit farms in Uyo and Ikot Ekpene, Akwa Ibom State. Upon arrival, they were clinically examined and screened for ecto-and endoparasites through physical inspection and faecal examination. As part of routine prophylactic management, the rabbits were treated with ivermectin (1ml) to control parasitic infestation and administered broad-spectrum antibiotics (oxytetracycline and sulphadimidine) to prevent bacterial infections during the acclimatization period. During the two-weeks acclimatization period, the rabbits were fed the control diet supplemented with a small quantity of *Centrosema pubescens*. Thereafter, the feeding trial commenced using the respective experimental diets. Clean drinking water was provided *ad libitum* throughout the study (28 weeks).

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Table 1: Gross composition of experimental diets

Ingredient	**T1**	**T2**	**T3**	**T4**	**T5**
Maize	30.00	30.00	30.00	30.00	30.00
Soybean cake	10.00	10.00	10.00	10.00	10.00
Wheat offal	25.00	25.00	25.00	25.00	25.00
Palm kernel cake	23.30	23.30	23.30	23.30	23.30
Groundnut cake	8.00	8.00	8.00	8.00	8.00
Bone meal	1.50	1.50	1.50	1.50	1.50
Limestone	1.50	1.50	1.50	1.50	1.50
Common salt	0.25	0.25	0.25	0.25	0.25
Premix	0.25	0.25	0.25	0.25	0.25
L – lysine	0.10	0.10	0.10	0.10	0.10
L-methionine	0.10	0.10	0.10	0.10	0.10
Total	100	100	100	100	100
Calculated Analysis					
Crude protein (%)	18.35	18.35	18.35	18.35	18.35
Metabolizable energy (Kcal/kg)	2812.08	2812.08	2812.08	2812.08	2812.08
Crude fibre (%)	8.39	8.39	8.39	8.39	8.39
Ether Extract	5.89	5.89	5.89	5.89	5.89
Ash	3.82	3.82	3.82	3.82	3.82
Nitrogen free extract	63.55	63.55	63.55	63.55	63.55

SDAPLM: Sun-dried African pear leaf meal
Levels of supplementation:
T1: 0g/Kg SDAPLM; T2: 2.50 g/kg SDAPLM; T3: 5 g/kg SDAPLM; T4: 7.50 g/kg SDAPLM & T5: 10.00 g/kg SDAPLM
Metabolizable Energy (ME): calculated according to the formula of Pauzenga (1985), ME= 37×%CP+ 81.8× %EE+35.6×%NFE

Blood collection and determination of pubertal hormones

Blood was collected from the marginal ear veins of the rabbits (both sexes). Sharp sterile razor blade was used to scrape off hair from the ears of the rabbits before swabbed with methylated spirit. After which, a syringe (insulin syringe) was gently inserted into the marginal ear vein to draw the blood. Blood of approximately 2ml was drawn into ethylenediamine tetracetic acid (EDTA) sample bottles for hormonal assay. Serum concentration of testosterone and estradiol were determined using enzyme – linked immune - sorbent assay (ELISA) kits. Luteinizing hormone and follicle stimulating hormone were determined using radioimmunoassay (RIA). These assays were done at the laboratory of School of Health Technology, Calabar, Cross River State.

Determination of reproductive performance

The does within the same treatment were taken to the bucks in the same replicate for mating, this lasted for 2 days. After successful mating was observed, the does were taken back to their respective pens. The data collected include; gestation length, litter size at birth, litter weight at birth, average birth weight, litter size at weaning, litter weight at weaning and pre -weaning mortality rate.

Statistical analysis

Data obtained in this study were analyzed using SPSS version 27 (SPSS, 2021) and subjected to one – way ANOVA. Significant means were separated using Duncan's multiple range test (Duncan, 1955).

Results

Proximate composition of Sun – dried African pear leaf meal

The proximate composition of Sun- dried African pear leaf meal is as presented in Table 2. It indicates the presence of residual moisture (8.33%), crude protein (17.50%), ether extract (4.00%), crude fibre (30%), ash (2.50%) and nitrogen free extract (37.57%).

Table 2: Proximate composition of Sun – dried African pear leaf meal

Parameters	Content (%)
Residual moisture	8.33
Crude protein	17.50
Ether extract	4.00
Crude fibre	30.00
Ash	2.50
Nitrogen free extract	37.57
Gross energy	3.50

Serum concentration of pubertal hormones in bucks and does

The serum concentrations of testosterone, estradiol, luteinizing hormone (LH) and follicle stimulating hormone (FSH) in pubertal does (Table 3) were within the normal range for pubertal rabbit does and were significantly ($p<0.01$) higher in African pear leaf meal supplemented groups (29.90±0.10 pg/ml, 29.70±0.10 pg/ml, 31.30±0.10 pg/ml, and 30.60±0.10 pg/ml) (T2, T3, T4 and T5) compared to the control (27.90±0.10 pg/ml) for estradiol and (18.70±0.10 IU/L, 18.50±0.10 IU/L, 19.20±0.10 IU/L and 20.10±0.10 IU/L) for luteinizing hormone. Follicle stimulating hormone followed a similar trend (15.70±0.10 IU/L, 14.71±0.10 IU/L, 16.00±0.10 IU/L) except for groups fed diets supplemented with 5.0 g/kg (12.23±0.10 IU/L) which was lower than the control (0 g/kg) (13.90±0.10 IU/L).

Table 3: Hormones of pubertal bucks and does fed diets supplemented with Sun – dried African pear leaf meal

	Treatments							
Parameters	T_1 (0 g/kg)	T_2 (2.5 g/kg)	T_3 (5.0 g/kg)	T_4 (7.5 g/kg)	T_5 (10 g/kg)	SEM	Pvalue	Normal range
Testosterone (nmol/L)	11.20^{c}	12.20^{b}	9.80^{e}	10.40^{d}	12.40^{a}	0.27	0.000**	10.4– 24.3
Estradiol (pg/mL)	27.90^{e}	29.90^{c}	29.70^{d}	31.30^{a}	30.60^{b}	0.31	0.000**	15 – 40
FSH (mIU/mL)	13.90^{b}	12.23^{c}	15.70^{a}	14.71^{b}	16.00^{a}	0.38	0.000**	10 – 15
LH (IU/L)	17.80^{e}	18.70^{c}	18.50^{d}	19.20^{b}	20.10^{a}	0.21	0.000**	10 – 50

^{a,b,c,d,e}: mean with different superscripts differ significantly @ $p<0.001$
SEM: standard error of mean
**: significant @ $p<0.001$
LH: Luteinizing hormone
FSH: Follicle stimulating hormone
Normal range for Testosterone, Estradiol, FSH and LH (Moor and Younglai,1975; DePaolo and Masoro, 1989; Suckow and Douglas, 1997; Rebollar *et al.*,2007).

Reproductive performance

The result of reproductive performance (Table 4) of the rabbits shows that there were significant differences ($p<0.001$) in the gestation length, average litter weight at birth and average litter weight at weaning across all the treatments. Rabbits fed diets supplemented with 7.5 g/kg African pear leaf meal had the shortest gestation length (28.50±0.50 days) compared to those obtained for 0 g/kg (31.50±0.50 days), 2.5 g/kg (30.00±0.50 days), 5.0 g/kg (31.50±0.50 days) and 10.0 g/kg (29.33±0.50 days); highest average litter weight at birth (41.17±1.34 g) compared to those obtained for 0 g/kg (31.21±0.46 days), 2.5 g/kg (33.77±5.61g), 5.0 g/kg (31.50±0.50 g) and 10.0 g/kg (28.50±2.90 g) and highest average litter weight at weaning (338.05±2.25 g) compared to those obtained for 0 g/kg 289.50±4.50 g), 2.5 g/kg (302.87±28.13 g), 5.0 g/kg (285.90±9.40 g) and 10.0 g/kg (279.33±25.49 g)**.** There were no significant differences ($p>0.05$) in the litter size at birth and pre - weaning mortality rate across all the treatments.

Table 4: Reproductive performance of mature female rabbits fed diets supplemented with African pear leaf meal

Parameter	T1 0 g/kg SDAPLM	T2 2.5g/kg SDAPLM	T3 5g/kg SDAPLM	T4 7.5g/kg SDAPLM	T5 10g/kg SDAPLM
Gestation length (days)	31.50±0.29^{a}	30.00±0.00^{b}	31.50±0.29^{a}	28.50±0.29^{c}	29.33±0.33^{bc}
Litter size at birth	5.50±1.44	5.00±0.00	5.00±0.00	6.00±0.00	5.00±0.58
Average litter weight at birth (g)	31.21±0.64^{b}	33.77±0.77^{b}	29.30±.0.64^{b}	41.17±0.77^{a}	28.50±1.67^{b}
Average litter size at weaning (4 weeks)	4.50±2.02	4.33±0.67	5.00±0.10	6.00±0.10	3.00±0.10
Average litter weight at weaning (g)	289.50±0.10^{b}	302.87±0.10^{b}	285.90±0.10^{b}	338.05±0.10^{a}	279.33±0.10^{b}
Pre - weaning mortality rate (%)	33.34±0.10^{a}	13.33±0.10^{b}	0.00±0.00^{d}	0.00±0.00^{d}	5.56±1.53^{c}

^{a,b,c,d,e}: means along the same row with different superscripts differ significantly @ $p<0.001$

Discussion

Proximate composition of Sun - dried African pear leaf meal

The residual moisture content of sun- dried African pear leaf meal (8.33%) is lower than that of *Ocimum gratissimum* (13.60%), *Vernonia amygdalina* (14.50%) and *Moringa oleifera* (14.20%) as reported by Olumide *et al*. (2019). This is because the African pear leaves were sun dried before analysis as opposed to Olumide *et al.* (2019) who used fresh leaves for the analysis. The crude protein composition of African pear leaf meal obtained in this study (17.50%) shows that it is rich in protein though lower in protein content compared to those for the leaves of *Vernonia amygdalina* (21.00%) and *Moringa oleifera* (25.90%) (Olumide *et al*., 2019) as well as *Leuceana leucocephala* (33.77%) and *Moringa oleifera* (36.05%) (Ayegba *et al*., 2016).

The ether extract (crude fat) content of African pear leaf meal (4.00) is higher than that reported for *Ocimum gratissimum* (4.20%) and *Moringa oleifera* (4.60%) but lower than that for Vernonia amygdalina (3.60%) as reported by Olumide *et al.* (2019) but lower than that of *Leuceana leucocephala* (2.87%) (Ayegba *et al*., 2016). The crude fibre content of African pear leaf meal obtained in this study (26.90± 0.32%) is higher than those reported by Olumide et al. (2019) for *Ocimum gratissimum* (7.60%), *Vernonia amygdalina* (8.90%) and *Moringa oleifera* (8.00%) and *Leuceana leucocephala* (7.92±0.28) (Ayegba *et al*., 2016). The ash content of the leaf meal obtained in this study is (2.50%) was lower than that for *Ocimum gratissimum* (10.50%), *Vernonia amygdalina* (7.10%) and *Moringa oleifera* (15.60%) as reported by Olumide *et al*. (2019) as well as *Leuceana leucocephala*

(8.17%) (Ayegba *et al.,* 2016). The carbohydrate (Nitrogen free extract) content of the African pear leaf meal (37.57%) reported in this study was higher than that of *Moringa oleifera* (31.70%) but lower than that for *Ocimum gratissimum* (49.75%) and *Vernonia amygdalina* (44.90%) as reported by Olumide *et al*. (2019). It was also lower than the value for *Leuceana leucocephala* (47.29%) reported by (Ayegba *et al*., 2016).

Serum concentration of hormones in pubertal bucks and does

The serum testosterone, estradiol, follicle stimulating hormone (FSH) and luteinizing hormone (LH) concentrations in the pubertal rabbit does were all within the normal ranges reported for pubertal rabbit does (Moor and Younglai,1975; DePaolo and Masoro, 1989; Suckow and Douglas, 1997; Rebollar *et al.*,2007).

Testosterone is the hormone responsible for the spermatogenesis, libido and development of secondary sexual characteristics male animals (Smith, 2022). Bucks fed diets supplemented with sun – dried African pear leaf meal had the highest testosterone levels. This finding indicated an increased endocrine response to African pear leaf meal at 10.0 g/kg supplementation level. This result can be attributed to the presence of flavonoids, alkaloids and polyphenol in African pear leaf meal which are well known for their ability to increase testosterone hormone concentration (Alabi *et al*., 2017; Türk *et al*., 2008; Jimoh *et al*., 2021) This result agrees with Khalifa *et al*. (2016) who showed that use of *Moringa oleifera* led to increase testosterone level in blood, and Gouda *et al*. (2020) who found that the use of *moringa oleifera* led to a significant ($P<0.05$) increase in the proportion of the testosterone hormone in the blood of rabbit bucks.

Estradiol is the hormone responsible for the growth and development of female reproductive organs. In synergy with follicle-stimulating hormone, it stimulates granulose cell proliferation during follicular development (Jimoh *et al.,* 2024). Follicle-stimulating hormone plays a crucial role in gonadal development, sexual maturity at puberty and gamete production in mammalian species; it acts to stimulate growth and maturation of ovarian follicles by influencing granulose cells receptors (Simon and Nieschlay, 1995). Luteinizing hormone functions to stimulates ovulation of mature follicles in the ovary. The significantly higher levels of estradiol, FSH and LH in African pear leaf meal treated groups suggests a positive impact of the leaf meal on the endocrine functioning of the does and puberty attainment which can be attributed to its polyphenol and saponin content which has been reported to stimulate reproductive hormone synthesis by acting on the hypothalamic–pituitary–ovarian axis (Verma *et al*., 2009; Coppin *et al*., 2013; Dorice *et al*., 2023). Flavonoids and polyphenols are known to neutralize reactive oxygen species (ROS), preserve follicular and gonadal function, and maintain the integrity of hormone - secreting cells (Obeagu *et al*., 2023). These results corroborate the findings of El–kashef (2022), who reported an increase in serum concentrations of estradiol, FSH and LH of rabbits fed diets with varying levels of

Moringa oleifera leaf meal, suggesting a positive effect of phytogenic supplements on reproductive hormone profiles. However, the study is in disagreement with the findings of Ajuogu *et al*. (2019), who reported a dose-dependent reduction in serum FSH, LH, and estrogen in female rabbits fed *Moringa oleifera* leaf powder, suggesting that the effect of phytogenic supplementation may vary with dose, extract type, or physiological status (Ajuogu *et al*., 2019). It was also in disagreement with the findings of Jimoh *et al.* (2023), who reported that *Phyllanthus amarus* leaf meal included as a feed additive did not influence the serum levels of FSH, LH and estradiol of virgin rabbits does.

Reproductive performance

Gestation length is the duration from successful mating to kindling in rabbits. The gestation length obtained in this study was within the range of 28-31days reported by Nguyen *et al*. (2006). The shortened gestation length observed in rabbits fed diets supplemented with 7.50 g/kg could be attributed to the higher levels of flavonoids and polyphenols present in African pear leaf meal. According to Christopher *et al.* (2025), these phytochemicals are known to exhibit antioxidant and anti-inflammatory properties that may influence uterine relaxation and earlier onset of parturition (Iqbal *et al.,* 2023). This finding is in agreement with the observations of Christopher *et al.* (2024), who reported a reduction in gestation length, when rabbit does were supplemented with *Moringa oleifera* leaf meal rich in similar bioactive compounds. It is however in disagreement with the findings of Vandu *et al*. (2020) who reported no significant differences in the gestation length of rabbits fed fermented jatropha seed meal - based diets. But totally contradicted the findings of Evans *et al*. (2026), who reported complete abortion for previously confirmed pregnant does after day 20 when fed fermented *Delonix regia* seed meal-based diets.

Litter size at birth is the number of live kits kindled per doe. The absence of significant differences in litter size at birth suggests that supplementation of African pear leaf meal up to the tested levels did not compromise ovulation rate or embryonic survival. This is consistent with the non-significant variation in litter size reported by Evans *et al*. (2022), when rabbits were fed diets containing graded levels of cassava peel meal. The superior litter weight at birth in the 7.50 g/kg supplemented group could be due to the optimum combination of crude protein, carbohydrates and essential minerals such as potassium and calcium in African pear leaf meal which likely supported better foetal growth and nutrient transfer across the placenta during late gestation (Udombon *et al*., 2025). This result is consistent with the findings of Ozung *et al.* (2022) who reported highest weaning weight for female rabbits fed fermented cocoa pod husk meal (CPHM) compared to those fed hot–water treated CPHM and raw CPHM groups. However, it is in disagreement with Odeyinka *et al.* (2008) who recorded no significant differences in birth weight of litters from does fed with Centrosema leaf meal at 30% level replacing *Moringa oleifera* leaf meal. The enhanced litter weight at weaning in 7.50 g/kg supplemented group reflects that

the treatment contained an optimal level of African pear leaf meal. The high crude protein and energy contents of the leaf meal probably supported greater lactational performance. This result corroborates the report of Christopher *et al.* (2024), who observed significantly higher weaning weights in kits from does fed with graded levels of sun-dried *Moringa oleifera* leaf meal. This result also agrees with the findings of Henry *et al*. (2018), who reported a higher average weight at weaning in rabbits fed diets supplemented with wilted pawpaw leaves compared to those fed fresh pawpaw leaves and the control. The absence of pre-weaning mortality in 5.00 g/kg and 7.50 g/kg supplemented groups could be linked to the antimicrobial and immune-modulating effects of saponins and flavonoids present in African pear leaf meal (Hochma *et al*., 2021; Shen *et al*., 2023). This result is in agreement with the findings of Alemede *et al.* (2014) who reported a higher survivability rate (lowest mortality) of kits post- weaning of rabbits fed diets containing 20% dried bovine rumen digesta. However, it is in disagreement with the findings of Evans *et al.* (2022), who reported post-weaning mortality across all treatments for rabbits fed diets containing graded levels of cassava peel meal. The disparity in the pre – weaning mortality obtained in the present study compared with other studies can be attributed to the residual cyanide present in sun dried cassava peel meal which is completely absent in sun-dried African pear leaf meal.

Conclusion

This study has shown that dietary supplementation with sun-dried African pear leaf meal (SDAPLM) significantly enhanced key pubertal reproductive hormones like testosterone, estradiol, follicle-stimulating hormone (FSH), and luteinizing hormone (LH) in rabbit does. Supplementation at 7.50 g/kg diet produced the highest estradiol levels and improved FSH and LH concentrations compared with the control and other treatment groups. Reproductive performance was also improved at this level, as evidenced by shorter gestation length and higher average litter weights at birth and weaning, respectively. Although, the 10.00 g/kg supplementation yielded the highest FSH and LH levels, it did not confer additional reproductive benefits and was associated with reduced litter size and litter weight. Overall, supplementation with APLM at 7.50 g/kg diet optimally supported pubertal hormonal balance and reproductive performance in rabbit does.

Recommendation

Based on the findings of this study, dietary supplementation of sun-dried African pear leaf meal at 7.50 g/kg is hereby recommended for improving pubertal hormonal profile and reproductive performance in male and female rabbits.

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