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EFFECTS OF PROCESSED SWEET POTATO DIETS ON THE KINETICS OF SPERMATOGENESIS IN BROILER BREEDER COCKS

(*Gallusgallus domesticus*)

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ABSTRACT

There is growing need to replace maize in poultry feeds with tropical root and tubers, hence the need to establish the effect of such feeds on the animal's reproductive potentials. Although the male's sperm-producing capacity is genetically-determined, several other external factors (photoperiod, nutrition, humidity, stress, and toxic substances) may contribute to determine what portion of the germ cells are actually delivered for reproductive purposes. The kinetics of spermatogenesis, volumetric proportion of testicular elements and diameter of seminiferous tubules were studied in 20 adult cocks (Yaffa-breed) fed processed sweet potato diets for ten weeks. Data were analyzed using randomized complete block experimental design. The results showed significant treatment effects ($P< 0.05$) between the control and the sweet potato diets on the volumetric proportion (%) of the testicular elements. Spermatogonia appeared highest (3.73 ± 0.08) in the grated sweet potato (GP_{25}) and least (3.15 ± 0.12) in the control maize-based diet. Spermatocytes equally appeared highest (10.80 ± 0.28) in GP_{25} and least (9.25 ± 0.12) in thinly sliced sweet potato (SP_{25}). There was no significant treatment effect in the spermatids, while spermatozoa were highest (4.40 ± 0.08) in the control diet and least (2.44 ± 0.12) in SP_{25}. Sertoli cells ranked highest (2.13 ± 0.08) in the control diet and least (1.05 ± 0.20) in SP_{25}. Leydig cells showed no significant treatment effect. Processed sweet potato diets favoured spermatogenesis with resultant potentially fertile cocks. Sweet potato is therefore an economically viable substitute for maize with no effect on the animal's reproductive potential.

Novelty Statement

Brought out the effect(s) of sweet potato meal on the reproductive potential of the cock

Proven that sweet potato can be a potential component in the feed of domestic fowls

Shown that sweet potato has no detrimental effect(s) on the spermatogenesis of the cock.

Shown that sweet potato is a palatable substitute for maize (which is in very high demand for other purposes) in the feed of the cock.

KEYWORDS: Poultry Feed, Spermatogenesis, Breeder Cocks, Sweet Potato, Reproduction

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