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Influence of diet variability on gonadal development in heterogeneous rabbit stock during rainy season in southwest Nigeria

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Abstract

In Nigeria, the rabbit stocks are mainly heterogeneous with limited information on their developmental potentials as influence by varying nutritional and climatic factors. This study assessed the effect of diet variations on testicular and ovarian development in heterogeneous rabbit stock during rainy season in Southwest Nigeria. Sixty-six heterogeneous adult rabbits (55 does and 11 bucks) were mated to obtain the kits used for this study. The rabbits were managed during a period (April to October) characterised by cold condition in Nigeria and fed concentrate diet throughout gestation till the kits were weaned at 4–5 weeks old. At weaning, the rabbits were randomly assigned to three diets - diet 1 (100 % concentrate), diet 2 (50 % concentrate and 50 % fresh *Moringa oleifera* leaves), and diet 3 (25 % concentrate and 75 % fresh *Moringa oleifera* leaves) and monitored till they attained puberty. The weight and histological assessment of the ovary and testes was done at 4, 8, 12 and 16weeks old. Data obtained was analysed using one way Analysis of Variance and means separated using Duncan Multiple Range test. The results obtained showed higher testes and ovary weights in rabbits fed diets 1 and 2 compared to those fed diet 3. The number of germ cells, follicles, follicles with lumen and granulosa cells in the ovaries from 4 to 16 weeks old were similar among the groups. The number of primordial cells, seminiferous tubules diameter, tubules with lumen and spermatogonia count were also not adversely altered by the diets however lower values were recorded in the testes of rabbits fed diet 3. Histological assessments at 16 weeks showed a significant ($p < 0.05$) impact of diets on the tests and ovaries of the rabbits at this age and consequently on puberty attainment. This suggests that concentrate diet with readily available plants such as *Moringa oleifera* leaves fed at a ratio of 1:1 may promote gonadal development in heterogeneous stock of rabbits thus minimising feeding cost, enhance climate-friendly rabbit farming and achieve optimum gonadal development during rainy season.

Keywords: Histology, *Moringa oleifera*, ovary, temperature-humidity index, testes

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