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Effect of dietary carrot meal supplementation on productivity of Arbor acre broiler chickensJones W Ng'ambi and Mokgope P Kgomotso
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Statement of the Problem: Broiler chickens are selected for their better feed conversion ratio and growth rates. However, their mortality rate is high and carcasses from broiler chickens have high fat contents. Excessive fat is one of the main problems faced by the broiler chicken industry. There is some evidence that carrot meal supplementation reduces chick mortality and improves carcass characteristics. However, such evidence is inconclusive.

Purpose: The purpose of the study is to determine the effects of supplementing diets with carrot meal on productivity of Arbor acre broiler chickens aged 1-21 days.

Materials & Methodology: Two hundred unsexed Arbor acre broiler chickens were randomly assigned to five treatments with five replicates, each replication having ten birds. A completely randomized design was used in this experiment. The treatments were 0, 20, 50, 75 or 100 g of carrot meal supplementation per kg DM (dry matter) feed. Quadratic equations were used to determine levels of carrot meal supplementation for optimal feed intake, metabolisable energy intake and nitrogen retention of Arbor acre broiler chickens aged 1 to 21 days. Linear equations were used to determine relationships between carrot meal supplementation and productivity variables.

Findings: Dietary carrot meal supplementation had no effect on growth rate, live weight and feed conversion ratio of unsexed Arbor acre broiler chickens aged 1 to 21 days. Carrot meal supplementation improved metabolisable energy intake and nitrogen retention of the chickens. Dietary metabolisable energy intake and nitrogen retention of the chickens were optimized at different carrot meal supplementation levels of 40.5 and 53.57 g/kg DM feed, respectively.

Conclusion & Significance: Carrot meal supplementation had no effect on the performance of unsexed Arbor acre broiler chickens aged one to 21 days. However, carrot meal supplementation improved metabolisable energy intake and nitrogen retention. Optimal improvements of these parameters were achieved at different carrot meal supplementation levels. This has a lot of implications in diet formulations where carrot meal is included.

Recent Publications

1. Yin X L, Liu H Y and Zhang Y Q (2017) Mulberry branch bark powder significantly improves hyperglycemia and regulates insulin secretion in type II diabetic mice. Food & Nutrition Research. 61(1):1368847. 1. Brown D et al. (2016) Blood profiles of indigenous pedi goats fed varying levels of Vachellia karroo leaf meal in Setaria verticillata hay-based diet. South African Journal of Animal Science. 46:432-440. Doi:10.4314/sajas.v46i4.11.
2. Brown D and Ng'ambi J W (2017) Effect of polyethylene glycol 4000 supplementations on the performance of yearling male pedi goats fed dietary mixture levels of Acacia karroo leaf meal and Setaria verticillata grass hay. Tropical Animal Health and Production. 49(5):1051-1057. Doi:10.1007/s11250-017-1305-9.
3. Brown D, Ngambi J W and Norris D (2017) Effect of Acacia karroo leaf meal inclusion on feed intake, digestibility and live weight gain of pedi goats fed a Setaria verticillata grass hay-based diet. Journal of Applied Animal Research. 46(1):248-253. Doi:10.1080/09712119.2017.1289939.
4. Ng'ambi J W et al. (2018). Effects of mixture level of sorghum hay with forage legumes on performance and blood metabolites of yearling indigenous pedi bucks. Applied Ecology and Environmental Research. 16(3):2197-2212. Doi:10.15666/aeer/1603_21972212.

Biography

Jones W Ng'ambi holds a BSc Degree in Animal Sciences (University of Zambia, Zambia); MSc in Animal Nutrition (University of Aberdeen, UK) and PhD in Animal Nutrition (University of London, UK). He is a Professor of Animal Nutrition at the University of Limpopo, Republic of South Africa. He has lectured at several universities. He has published extensively and is a Rated Researcher in Republic of South Africa.

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