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Growth performance, carcass characteristics and gut morphology of broiler chickens fed varying levels of nano selenium supplemented diets

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This study investigated the effects of supplementing different levels of dietary nano Selenium (Se) on the growth performance, carcass characteristics, and gut morphology of broiler chickens. A total of 200 Arbor Acre breed broiler chicks were randomly divided into five treatment groups. The first group served as the control with no added test ingredient (0 level), while the other four groups received varying levels of the test ingredient: 0.10, 0.15, 0.20, and 0.25 mg/kg, labelled as NSe0.10, NSe0.15, NSe0.20, and NSe0.25, respectively. Each treatment had four replicates with 10 birds per replicate. Growth performance, carcass characteristics, and gut morphology data were collected and analysed using one-way analysis of variance. Duncan multiple range test was used to compare means with significant differences ($P < 0.05$). The results demonstrated that supplementing dietary nano Se significantly influenced the final body weight (FBW), body weight gain (BWG), feed intake (F.I.), and feed conversion ratio (FCR) during both the starter phase (0–4 weeks) and the grower phase (5–7 weeks) of the experiment. Additionally, the dressing percentage, thigh weight, lung weight, gizzard weight, and crypt depth were significantly affected by dietary nano Se supplementation. Specifically, supplementing the diet with 0.25 mg/kg of nano Se improved BWG (990.32 g) and FCR (1.93) during the starter phase compared to the control group (684.73 g and 2.63, respectively). Similarly, birds fed diets supplemented with 0.25 mg/kg of nano Se exhibited higher BWG (1339.78 g) and better FCR (1.94) during the grower phase compared to the control group (958.01 g and 2.60, respectively). Furthermore, supplementation of 0.25 mg/kg of nano Se improved dressing percentage (74.87%) compared to the control (57.42%). In conclusion, this study revealed that supplementing Arbor Acre broiler diets with 0.25 mg/kg of nano Se enhanced growth performance, meat quality, and gut morphology. These findings highlight the potential benefits of nano Se supplementation in broiler chicken production.

Recent Publications:

1. Alabi, O. J., Ng'ambi, J. W., and Mbajiorgu, E. F. (2020). Aqueous extract of Moringa (*Moringa oleifera*) leaf (aemol) on the growth, sensory and histology. parameters of broiler chickens Applied Ecology and Environmental Research 18 (5):6753-6764.
2. Alabi, O. J., Ng'ambi, J. W., and Mbajiorgu, E. F. (2020). Aqueous extract of Moringa (*Moringa oleifera*) leaf (aemol) on the growth, sensory and histology. parameters of broiler chickens Applied Ecology and Environmental Research 18 (5):6753-6764.
3. Ayanwale, B.A., Egwim, E.C., Alemede, I.C., Otu, B.O., Egena, S.S.A., Ocheme, O.B., Alabi, O.J., Jiya, E.Z., Tsado, D.N., Abu, M.H. and Bamidele, R.O., 2023. Growth performance and meat quality of broiler chickens on diets containing Keratinase-treated and untreated feather meal-based diets. Acta Agriculturae Scandinavica, Section A—Animal Science, pp.1-11.

Biography

An innovative scientist with over 10 years teaching and research experience in the field of Animal nutrition, forage science and livestock environment interaction. Research experience includes: alternative to conventional feed stuff for animal, improvement of non-conventional feedstuff, nutrient requirements for African chicken, participatory rural appraisal, village extension outreaches, research exhibitions, monitoring and evaluation of funded research as well as development of livestock marketing and extension strategies.

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