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Optimal tryptophan intake for laying hens

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Modern poultry industry has been gradually decreasing crude protein content of poultry diets and meeting poultry amino acid requirement more precisely, in order to save production costs and reduce the negative impact of livestock on environment. In this context, determining Tryptophan (Trp) requirements of laying hens could allow further reductions on dietary CP supply. A total of 60 29-week-old Hysex White laying hens were individually allocated into 6 dietary treatments with 10 replicates. The six Trp levels studied in this trial (0.81; 1.06; 1.50; 1.86; 2.05 and 2.30 g/kg) were obtained using the dilution technique. The trial lasted 10 weeks, but only those from the final 4 weeks were used in subsequent analysis. Optimal Trp intake was estimated using polynomial, broken-line regression model and the association between both models. Graded Trp intake elicited a quadratic response on egg production (EP) and egg output (EO), which were maximized at 196 and 208 mg Trp/bird/day, respectively, whereas feed conversion ratio per egg output (FCR) were optimized at 185 mg Trp/bird/day. According to broken-line regression model, the breakpoint estimated for maximum EP and EO; and optimal FCR occurred with a daily Trp intake of 117, 134 and 50 mg/bird. The association between polynomial and broken-line regression models produced the optimal Trp intake of 161, 173 and 66 mg/bird/day for EP, EO and FCR. Based on EO responses estimated by associating both regression models, the optimal Trp intake for laying hens is 173 mg/bird/day.

Biography

Nilva Kazue Sakomura has completed her PhD at Federal University of Viçosa and Postdoctoral studies at University of Arkansas, USA and University of KwaZulu-Natal, South Africa. She is the Professor at the Paulista State University, FCAV/UNESP and coordinates the Laboratory of Avian Sciences at same university. Her research area is mainly focused on modeling amino acid requirements of broilers, laying hens and broiler breeders.

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