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Ideal in-feed amino acid ratio for laying hens

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The research was conducted to re-evaluate the assumptions of Ideal Ratios (IAAR) of the essential amino acids for Hy-line W-36 laying hens, using the amino acid deletion and nitrogen balance methods. The nitrogen balance trial was performed from 28 to 32 weeks of age, 12 treatments with 8 replicates and 1 bird per cage were used. A Balanced Diet (BD) was formulated to meet the IAAR and the requirement of other nutrients. The limiting diets were formulated diluting BD with corn starch and refilled with synthetic Amino Acids (AA) and other feed ingredients, except for the AA studied. The trial lasted 25 days, being the first 5 days for adaptation and the other 20 days for total collection of excreta and eggs. Diets, excreta and eggs samples were analyzed for nitrogen content to quantify nitrogen intake and excretion. From these data, nitrogen retention (NR) was calculated. The estimated requirement of each AA (AAR) was calculated as $AAR = 100 \times (1 - NR_i / NR_{control})$ where NR_i is the NR associated with each limiting diet calculated and $NR_{control}$ is the NR associated with the balanced control diet. The estimated optimum ratio between each AA and Lys $[(AA/Lys) \times 100]$ and the optimum level of each AA (values in parentheses) were: Lys=100 (0.673), Met+Cys=82 (0.552), Thr=69 (0.464), Trp=21 (0.141), Arg=104 (0.700), Val=91 (0.612), Ile=78 (0.525), Leu=121 (0.814), Phe+Tyr=119 (0.801), Gly+Ser=77 (0.518) and His=29 (0.195).

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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