Tropentag, September 17-19, 2014, Prague, Czech Republic

"Bridging the gap between increasing knowledge and decreasing resources"

Canavalia Brasiliensis Forage Meal in Broilers' Finishing Diets: *in vivo* Digestibility and Animal Performance

Mauricio Sotelo[1], Nelson José Vivas Quila[2], Siriwan Martens[1], Luz Stella Muñoz[3], Edwin Arley Vivas Orozco[2], Mario Cuchillo Hilario[1]

[1] *International Center for Tropical Agriculture (CIAT), Tropical Forages, Colombia*
[2] *University of Cauca, Dept. of Agricultural Sciences, Colombia*
[3] *Universidad Nacional de Colombia (UNAL), Dept. of Animal Science, Colombia*

Abstract

Cereal grains are the bases for monogastric animal feeding. However, further utilisation of such high-quality sources of protein and energy would be heavily modulated by direct competition with human consumption. Therefore, it is necessary to find alternative resources to feed animals while avoiding competition with human food. We evaluated the inclusion of *Canavalia brasiliensis* (CIAT-17009) forage meal on poultry finishing diets. 120 male birds (Cobb 500) of 18 days of age were arranged: 1) control group (CON) fed with corn-meal (66.1 %), soybean-meal (22.3 %), fish-meal (5.1 %), bentonite (1.9 %), phosphorous [Biofoss (1.0 %)], Calcium carbonate (1.1 %), palm oil (1.0 %), vitamins-minerals (1.0 %), salt (0.4 %), DL-methionine (0.1 %) and L-lisine (0.1 %). The experimental group fed 2) the same components as CON, but Canavalia meal (20.0 %) was included (CAN). There were six replicates (experimental unit) with 10 birds each per treatment. A completely randomised design was employed. The experiment lasted 22 days in total. An adaptation phase (10 days) was followed by the experimental phase (12 days). Animals were fed at 0730, 1200 and 1600h. Feces were sampled (at 0700 and 1800h) along the last eight days of the finishing period. Diet digestibility was higher in CON (62.0 %, $p = 0.006$) than in CAN (57.4 %). However, the inclusion of Canavalia in the diet increased apparent protein digestibility (52.5 % and 40.5 % for CAN and CON, respectively). No differences were found for gross-energy digestibility (CON=68.5 % and CAN=62.1 %). Crude-fiber digestibility was lower ($p = 0.0001$) in CAN (7.2 %) than in CON (35.4 %). In line with these results, CON recorded the best feed conversion (2.5) in contrast to CAN (3.7)($p = 0.0001$). Better average daily live-weight gain ($p = 0.0001$) was observed in CON (90g/animal/d) compared to CAN (62.4 g/animal/d). Final-weight of birds averaged 1745 g for CON while CAN recorded 1463 g. Cost of diet was lower including Canavalia (0.38 vs. 0.50 USD kg^{-1} for CAN and CON, respectively). Though diets including *Canavalia brasiliensis* showed in general lower digestibility parameters, this forage might be a valuable alternative as protein source. Graded levels of inclusion of Canavalia on diet should be tested before discard or recommend this legume for poultry feeding.

Keywords: *Canavalia brasiliensis*, digestibility, legumes, poultry, tropical forages

Contact Address: Mauricio Sotelo, International Center for Tropical Agriculture (CIAT), Tropical Forages, A A 6713 Cali, Colombia, Cali, Colombia, e-mail: m.sotelo@cgiar.org