



Tropentag, October 5-7, 2011, Bonn

“Development on the margin”

In vivo Digestibility of *Vigna unguiculata* Grain Meal in Broilers

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Abstract

Investigating alternative feed for broiler chickens of small producers, the coefficient of apparent digestibility of *Vigna unguiculata* grain in raw and cooked form was determined. Therefore, a completely randomised design with three treatments and six repetitions was applied, substituting weight for weight and using male chickens (line COOB 500) in the finisher phase. They were confined in metabolic cages with 8 days acclimatisation to the ambient and 5 days to the experimental diet previous to the measurement of digestibility. The following treatments were applied: T0 control diet (balanced, non-commercial), T1 70% control diet control and 30% raw *V. unguiculata* grain, and T2: 70% control diet and 30% cooked (5') *V. unguiculata* grain. The apparent fecal digestibility of raw and cooked grain was determined, as well as of single nutrients of the diet.

The coefficients of apparent dry matter (DM) digestibility of raw and cooked grains of *V. unguiculata* were 66.95 and 72.78%, respectively. The apparent DM digestibility of the complete diets did not show significant differences between T0 (78.3%) and T2 (76.6%), nor between T2 and T1 (74.9%) ($p > 0.05$).

Single components of the diets did not differ statistically in digestibility ($p > 0.05$): ether extract (87.3% for T0 and 84.5% for T1 and T2), crude protein (T0 70.6%, T2 70%, and T1 65.2%). In gross energy (T0 84.2%, T2 84.9% and T1 80.5%), the digestibility of T0 and T2 was similar, and higher than T1 ($p < 0.05$). The three treatments differed significantly in the digestibility of the crude fiber (48.1%, 31.9% and 62% for T0, T1 and T2 respectively). Digestibility of nitrogen-free extract (T0 87.3%, T1 and T2 84.5%) was significantly different between T0 and the other two treatments, while ash was similarly digested in T1 (26.8%) and T2 (34.5%) compared to T0 (31.9%) ($p > 0.05$).

The similarity observed for the digestibility and consumption of *V. unguiculata* grain compared to control suggests it as an alternative to soybean meal to reduce production costs.

Keywords: Broiler, grain meal, *in vivo* digestibility, legume grain, *Vigna unguiculata*