Book of Abstracts of the 60th Annual Meeting of the European Association for Animal Production

Determination of apparent metabolizable energy of sunflower seed meal in broiler chickens

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This experiment was conducted to determine the AMEn value of SFSM with a multilevel assay including 3 dietary inclusion levels (7, 14, and 21%) of SFSM that is incorporated to the basal diet of broiler (2 to 3 wk of age) and contained 0.3% chromium oxide as an indigestible marker. One-day old male chicks fed a standard broiler diet for 2 wk. On d 10, 80 birds were placed at random in 16 cages for 4 replicates per dietary treatments. On d 15, the birds were starved for 4 hours and then received the experimental diets from 15 to 21 d of age. During the last 3 d, excreta samples from each cage were collected and stored at -20 °C. After being thawed, excreta were homogenized, dried, and ground through a 1-mm screen. Diets and excreta were analysed for dry matter, CP, chromium oxide, and gross energy. Apparent metabolizable energy was calculated as follows: $ME(kcal/kg)=\text{dietary gross energy}\times[1-(dietCr_2O_3/excretaCr_2O_3)\times(\text{excreta gross energy}/\text{diet gross energy})]$. The correction of AME to zero nitrogen retention (AMEn) was based on a factor of 8.22 kcal/g of retained N. The AMEn value of SFSM was calculated using the following equation: $AMEn=(AMEnT-\alpha\times AMEnB)/b$, where T is the test diet, α is the proportion of the basal diet in the test diets, B is the basal diet, and b is the proportion of SFSM in the test diets. Results showed that increasing inclusion rate of SFSM decreased the AMEn of the diets significantly. The AMEn (kcal/kg) of SFSM, calculated by difference ranged from 95 to 1233 kcal/kg. The AMEn values obtained for the diets were regressed against the level of SFSM in the basal diet to estimate the AMEn content in SFSM. The equation derived by fitting a linear model was the following: $y = 2957-1.735x$; $R^2=0.736$. An estimate of the AMEn of SFSM, obtained by extrapolation of this equation gave a value of 1222 kcal/kg.