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Apparent digestibility of canola meal nutrients using exogenous enzymes in broiler chickens

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Canola meal (CM) is an important ingredient in the feeding poultry. However, CM has anti-nutritional factors that induce reduction on nutrient digestibility. Exogenous enzymes in poultry diets could improve the nutritional value of some vegetable feedstuffs. The objective of this study was to evaluate the apparent total tract digestibility (ATTD) of dry matter (DM), crude protein (CP), apparent metabolizable energy (AME), ash, calcium (Ca), phosphorus (P) and neutral detergent fiber (NDF) in CM with or without multicarbohydrase (MC) and phytase (Phy) supplementation using broiler chickens. Day-old male broilers (245) were allocated to five treatments in a randomized complete design. Each treatment had seven replicate cages with seven broilers per replicate. Reference corn diet was replaced by 30% of CM on ATTD determination. A completely randomized experimental design with a 2×2 (with or without MC and Phy) factorial treatment arrangement was used to determine the effects of enzymes. Data were submitted to variance analysis using SAS 9.2. The ATTD of DM and AME improved ($P<0.05$) with isolate enzymes addition. Interaction ($P<0.05$) was observed between enzymes on ATTD ash, CP, Ca and P and a trend ($P=0.06$) for NDF digestibility. For all nutrients and AME, the treatments with enzymes showed higher digestibility coefficients than the control diet. The results confirmed that MC and Phy combination in CM produces greater benefit for broiler chick compared to isolated enzymes.

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Effects of sulfur on the nutrition value of DDGS for beef cattle

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To investigate the effects of sulfur on the nutrition value of DDGS for beef cattle, *in vitro* cultivation was conducted for 72 hours with the rumen fluid collected from steers, setting different sulfur levels (0.346%, 0.692% and 1.038%) and various sulfur sources (Na_2SO_4, Na_2SO_3, $Na_2S_2O_3$ and Na_2S), monitoring the fermentation parameters (dry matter digestibility, gas production and its rate) and model predicted indicators (organic matter digestibility, metabolizable energy, net energy, microbial protein, partitioning factor and gas yield). The results showed that, high sulfur level (0.692% and 1.038%) only decreased ($P<0.05$) asymptotic gas production (b), while different sulfur sources resulted in various parameters, more specifically, sulfur from Na_2SO_4 and Na_2S produced more gas ($P<0.05$) with faster rate ($P<0.01$) of gas production than those of Na_2SO_3 and $Na_2S_2O_3$, while Na_2SO_3 had the highest b and inverse for Na_2SO_4 ($P<0.01$), which tended ($P=0.09$) to produced lower total volatile fatty acids than the others; sulfur from Na_2SO_4 and Na_2S also had a lower ($P<0.01$) DMD in 24 hours, MCP, PF24 and a higher ($P<0.01$) OMD, ME, NEm, NEg, GY24 than those of Na_2SO_3 and $Na_2S_2O_3$. These results suggest that DDGS with different sulfur content ranging from 0.346% to 1.038% have a similar feed value and dietary sulfur source exerts a great effect on its nutrition value for beef cattle.

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