

426P Effect of xylanase on apparent metabolizable energy and apparent ileal digestibility of amino acids: Meta-analysis approach. M. Zouaoui*, F. Guay, and M.-P. Létourneau-Montminy, *Université Laval, Quebec, QC, Canada.*

The key of nutrition consists in the combination of feed formula and ingredients to maximize nutrient utilization and optimizing feed cost. Feedstuffs of plant origin used in broiler production contain indigestible substances. In addition to phytic acid, carbohydrates known as non-starch polysaccharide (NSP) are considered low digested by broilers. Xylanase was known to release energy from the fibrous portion of cereals. Therefore, energy should be the most sensitive parameter for assessing the value of xylanase. The objective of this study is to evaluate the effect of xylanase supplementation on apparent metabolizable energy (AME) and amino acid (AA) apparent ileal digestibility (AID) in broilers through meta-analysis approach. Forty articles published between 1997 and 2018 and including 196 experiments were used. Multiple regression models were fitted with the random effect of the experiment. Xylanase supplementation increases linearly AME ($P = 0.01$, $R^2 = 0.87$); an improvement of $0.90 \text{ MJ kg}^{-1} \text{ DM}$ was estimated with 2000 XU kg^{-1} . In addition to improving the digestibility of AME, xylanase linearly improved the AID of all essential amino acids ($P < 0.001$: Thr, $R^2 = 0.61$; $P < 0.01$: Ile, $R^2 = 0.77$, Leu, $R^2 = 0.79$, Lys, $R^2 = 0.91$, Met, $R^2 = 0.91$, Phe, $R^2 = 0.85$, Ser, $R^2 = 0.83$; $P < 0.05$: Arg, $R^2 = 0.85$) and tended to increase linearly AID of His ($P = 0.07$, $R^2 = 0.88$) and Val ($P = 0.08$, $R^2 = 0.76$). The incorporation of 2000 XU kg^{-1} generates an increase of AID from 2% for Thr to 0.7% for Val. These improvements in AA AID with xylanase may reflect reduced endogenous AA losses resulting from the reduction of the anti-nutritive effects of NSP. The current study showed that xylanase supplementation affected positively AA AID and AME but this effect may vary depending on the composition of the diet. The current models allow quantifying the effect of xylanase on AME and AA which is important for broiler nutrition and feed industry.

Key Words: broiler, amino acid, apparent metabolizable energy, xylanase, meta-analysis