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## NITROGEN AND AMINO ACID DIGESTA FLOWS IN BROILERS FED HEAT DAMAGED PROTEIN INGREDIENTS

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Due to an increasing feed-food competition for protein, less digestible protein is expected to be fed to broilers in the future. However, pre-cecal indigestible protein may lead to hind-gut protein fermentation (PF) and the production of potentially health detrimental metabolites. To evaluate effects of PF on gut health, an experimental contrast in ileal N flow is required.

Often, such a contrast is realized by replacing a highly digestible protein source with a less digestible one. However, this does not always increase PF metabolites in the ceca, as other nutrients, such as fibers, may confound the effects of PF. Therefore, our objective was to develop a model that creates a contrast in PF by reducing protein digestibility within ingredients. To this end, we used severe toasting of protein sources and evaluated the effect on ileal nitrogen (N) and amino acid (AA) flows.

Pre-cecal ileal content, excreta and ceca content were collected from 240 broilers fed one of six diets (8 replicate pens) for 30 days. Diets contained 20% soybean meal (SBM), high protein sunflower meal (SFM) or dehulled rapeseed meal (dRSM) as is, or heat damaged by secondary toasting at 136°C for 20 minutes (tSBM, tSFM or tdRSM). TiO<sub>2</sub> (1g/kg) was included as inert marker in diets for the determination of digesta flows. The effect of toasting was evaluated per ingredient separately, using the GLM procedure of SAS 9.4.

Toasting SBM increased the ileal flow of N (851 vs. 744 mg/d) and most of the AA (mean increase 35 mg/d). The daily excreted N (excl. uric acid N) did not differ significantly between SBM and tSBM diets, but excretions of some AA did increase (mean 34 mg/d).

Toasting SFM did not affect ileal flow or excretion of N and AA. Toasting dRSM increased the ileal flow of N (862 vs. 665 mg/d) and all AA (mean 56 mg/day), as well as daily excretion of N (999 vs. 761 mg/d, excl. uric acid N) and AA (mean increase 71 mg/d).

Toasting dRSM, and to a lesser extent SBM, increased the flow of PF substrate into the hindgut of broilers, making these potential models for examining PF. The increase in N and AA from ileum to excreta might be the result of microbial growth. Microbe quantification will be needed to elucidate whether this is the case.