Evaluation of the Energy Content and Other Considerations of Feeding Poultry Corn Oil Extracted During the Production of Dried Distillers Grains with Solubles

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The adoption of backend oil extraction by ethanol producers was completed rapidly as the economics provided quick paybacks on up front investments while generating additional value added products from the conversion of corn to ethanol and now reduced oil dried distillers grains with solubles (RO-DDGS), CO2 and crude corn oil. In response to this rapid technology adoption, the first major research focus was on the effects of these RO-DDGS in poultry production, as the oil content of DDGS generated a substantial amount of the energy poultry utilize from this feed ingredient. Results indicate that as expected, removal of oil reduces the energy value of RO-DDGS and producers have explored ways to offset this energy loss and the addition of corn oil removed during the ethanol production process to poultry diets has received more interest and attention. With the rapid adoption of post fermentation oil removal large quantities of corn oil are being generated for use in bio-fuels and animal production. The use of this corn oil from ethanol production as a feeding ingredient is new and needs to be further explored to maximize information available to nutritionists for accurate formulation and feeding. The first question to be answered becomes what energy value to assign to this corn oil product. Historically, corn oil has had a relatively high metabolizable energy (ME) value in poultry feeding, but these data have been generated with refined and higher quality samples used in research, therefore validation of these higher energy values using corn oil generated from the ethanol process are needed and will be discussed. In addition to the differences in proposed ME, corn oil contains a high concentration of unsaturated fatty acids in comparison to animal fats and even animal and vegetable blended fats. This higher concentration of unsaturated fatty acids has the potential to oxidize resulting in damage to the oil that can reduce energy and bird performance. Data will be presented using a corn oil model with two types of oxidative damage including a slow and rapid application of heat to induce oxidation. The removal of oil during the DDGS production method is a reality and understanding those challenges and opportunities will be critical to efficient poultry production and some thoughts will be presented regarding the efficiency of oil utilization depending on oil source, either as part of an ingredient matrix (i.e. DDGS) or as an extracted oil (corn oil).