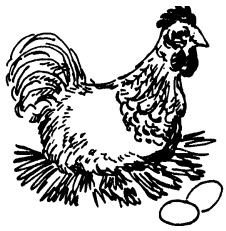
The University of Georgia
Cooperative Extension Service
College of Agricultural and Environmental Sciences / Athens, Georgia 30602-4356

MAY 2007



COMMERCIAL EGG TIP . . .

THE CHALLENGE OF IMPROVING THE ENERGY OF DDGS WITH SUPPLEMENTAL ENZYMES

The tremendous growth of the ethanol industry is making increasing amounts of Dried Distillers Grains plus Solubles (DDGS) available to the poultry industry. Studies at the Poultry Science Department of the University of Georgia and elsewhere have characterized the nutrient composition of this ingredient, including it's level of metabolizable energy. This parameter is of major importance due to the increase in cost of corn and fat, traditional major sources of energy in feeds. As the metabolizable energy of DDGS is significantly lower than that of corn (1275 vs. 1545 kcal/lb, or 2800 vs. 3400 kcal/kg), questions have been raised about the feasibility of increasing the caloric value of DDGS through the use of supplemental enzymes. At present, several concerns in this regard need to be addressed.

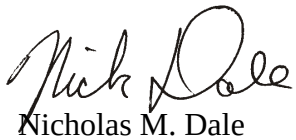
First, while it is possible to include more than 10% DDGS in a finished feed, levels of inclusion of between 5 and 8% are much more common. Existing bin capacity is an obvious limitation for many mills. Also, high levels of DDGS replace a significant amount of soy protein with lower quality corn protein. The resulting amino acid shift becomes especially noticeable when levels of DDGS exceed 8 to 10% of the finished feed. When considering whether to employ any enzyme, the ingredient(s) containing the target substrate must be included in the formula at reasonably high levels. Some nutritionists feel it is necessary to include at least 20% wheat or barley in the diet to justify the use of xylanase or β-glucanase, respectively. In another example, as most feeds contain at least 90% plant ingredients, there is ample substrate to consider the use of phytase. However, if 10% or less DDGS is included in the ration, then from 90 to 99% of the feed ration will be composed of ingredients other than that for which the enzyme is intended.

Second, the question must be asked: "How much of an improvement in the metabolizable energy of DDGS could be expected from enzyme supplementation under the most favorable scenario?" Any improvement would appear to be modest. The oil and protein components of DDGS are far better utilized than the xylans of wheat, the β-glucans of barley, or the phytate of plant ingredients,

substrates for which enzyme use is clearly justified. It is unlikely that supplemental enzymes would improve the digestion of the 9% crude fiber in DDGS. It is thus unclear whether there is suitable substrate in DDGS for a supplemental enzyme to actually hydrolyze. In any case, exactly what the target substrate may be needs to be articulated.

A third consideration involves the fact that DDGS has already been twice exposed to the action of enzymes prior to its incorporation in feed. Ground grain is initially moistened and treated with enzymes to facilitate subsequent microbial fermentation. Subsequently, the fermentation process itself involves the action of multiple microbial enzymes to produce ethanol. It needs to be confirmed that there remains a significant amount of relevant substrate in the DDGS that would have escaped the action of the first two enzyme systems.

Tentative Conclusion: At the present time, the potential for supplemental enzymes to improve the metabolizable energy of DDGS appears modest. Corn is recognized to contain much lower levels of non-starch polysaccharides than grains for which enzyme use is successful. It is uncertain whether residues of such compounds remain after fermentation. In addition, the practical impact of any improvement in digestion must be considered. If, taking an optimistic view, enzyme supplementation were to improve the metabolizable energy of DDGS by 60 kcal/lb. (ie., 130 kcal/kg), and 8% DDGS were included in the feed, the ME of the finished feed would increase by only 4.8 kcal/lb (10.4 kcal/kg). To put this in perspective, a change of only 1% in the moisture of corn would increase or decrease the energy of the feed by 15 kcal/lb (34 kcal/kg). Thus, pending further research and the possible development of innovative enzyme supplements, a meaningful increase in the metabolizable energy of DDGS currently appears questionable.



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Consult with your poultry company representative before making management changes.

"Your local County Extension Agent is a source of more information on this subject"