EFFECTS OF PHYTASE ON APPARENT METABOLISABLE ENERGY IN BROILER DIETS BASED ON WHEAT OR SORGHUM

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The benefits of phytase addition to poultry diets in improving P availability, growth performance, digestibility of crude protein and individual amino acids are well established and documented (Kies et al., 2001). In contrast, the effects of phytase addition on the metabolisable energy (ME) are less well understood. Ravindran et al. (1999) reported a positive effect of phytase addition on apparent ME in diets with wheat, whereas Biehl and Baker (1997) showed no effect of phytase addition on true ME₉. The present study reports on the effects of two commercially available phytase products on the apparent ME (AME) in wheat-based diets with or without xylanase and in sorghum-based diets without xylanase.

Nine experimental diets based on wheat/soybean meal sorghum/SBM were formulated to commercial standards with reduced Ca (0.84%) and available P (0.36%) levels. Two phytases were added at their recommended dosage as granulates prior to pelleting (P1 at 300 ppm and P2 at 100 ppm). All diets were cold-pelleted (60°C). The xylanase product was sprayed onto the feed after pelleting. Feed intake and excreta output of 225 male and 180 female broiler chickens (5 birds/cage and 9 reps/diet) were measured over a 4-day period. Gross energy of the excreta and feed was determined by bomb calorimetry and the AME of each diet was calculated.

<table>
<thead>
<tr>
<th>Grain</th>
<th>Control</th>
<th>Xyl</th>
<th>P1</th>
<th>P2</th>
<th>Xyl+P1</th>
<th>Xyl+P2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat</td>
<td>14.88c</td>
<td>15.65b</td>
<td>15.07c</td>
<td>14.85c</td>
<td>15.45b</td>
<td>15.50b</td>
</tr>
<tr>
<td>Sorghum</td>
<td>16.15a</td>
<td>---</td>
<td>16.15a</td>
<td>16.20a</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

Note: Means without a common superscript are significantly different (P<0.05). SEM = 0.070

The inclusion of phytase in either the wheat-based or sorghum-based basal diets had no effect on the AME of the diet. Wheat diets supplemented with xylanase had a significantly higher AME compare to the control diet or diets with phytase only. These results are in contrast to the findings of Ravindran et al. (1999) who showed an improvement of 6.3 and 4.5%, respectively, for AME value of wheat with phytase. The present results suggest that assignment of a fixed energy value to phytase in feed formulation is questionable since there exists some doubt on the energy response to added phytase in broiler diets.


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