EFFECT OF LIPASE SUPPLEMENTATION OF RICE BRAN ON EXCRETA ENERGY CONTENT IN ADULT COCKERELS

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Rice bran is a potentially important feedstuff for poultry, containing relatively high concentrations of crude protein (130-170 g/kg) and fat (200-230 g/kg). Rice bran also contains high levels of non-starch polysaccharides but it does not appear that these are anti-nutritive for broiler chickens (Annison et al., 1995). However, the AME content of rice-bran is lower than anticipated on the basis of its gross energy content and it may be that this is related to utilization of the lipid component (Warren and Farrell, 1990; Annison et al., 1995). The aim of the present study was to assess the influence of an exogenous lipase (Alltech Inc., USA) on the bioavailability of energy from rice bran. Adult Hyline Brown cockerels were housed individually in wire-bottomed cages in a temperature (18°C) and light (16h) controlled room. The birds were fasted for 48h and were then intubated with 40g of rice bran without or with (100 mg/kg) added lipase. Total excreta were collected (48h) and feed and excreta were subjected to bomb calorimetry and AME was determined (Sibbald, 1975). Results (mean ± SE) are shown below.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Excreta Energy (MJ/kg dry matter)</th>
<th>Excreta Weight (g dry matter)</th>
<th>AME (MJ/kg 'as is')</th>
</tr>
</thead>
<tbody>
<tr>
<td>RB¹ - Lipase (n=12)</td>
<td>16.57⁺ (0.175)</td>
<td>20.2⁺ (0.33)</td>
<td>12.15⁺ (0.176)</td>
</tr>
<tr>
<td>RB + Lipase (n=11)</td>
<td>15.76⁻ (0.203)</td>
<td>20.7⁺ (0.34)</td>
<td>12.47⁻ (0.167)</td>
</tr>
</tbody>
</table>

Means within a column having different superscripts are significantly different at P<0.05.
1RB = Australian full-fat rice bran.

Supplementation with lipase led to a significant (P<0.05) reduction in faecal energy concentration which translated to a non-significantly higher AME value. The results of a further study suggest that broiler chickens may show a greater response to lipase than cockerels. Significant (P<0.05) increases in the AME of rice bran-containing diets have been found as a result of supplementing broiler diets with lipase. Based on the results of these two studies it would appear that lipase supplementation may provide a useful means for increasing the bioavailability of energy in rice bran-containing diets for chickens.


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