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Growth performance and carcass characteristics of beef cattle fed soybean meal, sunflower meal and distiller’s grain as protein sources in China

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Background - Soybean meal, sunflower meal and dried distiller’s grain are the three major protein sources for beef cattle in Northeast China. There are substantial differences in protein and amino acid contents among these three ingredients. Therefore the cost of each ingredient differs significantly from one another with soybean meal the most expensive and dried distiller’s grain the cheapest.

Objective - To investigate the effect of soybean, sunflower meals and distiller’s grain on growth performance and carcass characteristics of beef cattle.

Design - Thirty Chinese Red oxen with average body weight of 230 kg were allocated into 30 individual pen. Three experimental diets composed of soybean meal, sunflower meal or dried distiller’s grain as protein sources and the rest of diets were similar and had the same nutrient content. Each diet was fed to 10 pens. During the experimental period of 268 days, dietary formulation was adjusted according to the growth stage of cattle. Feed intake was recorded daily and body weight was measured monthly. At the end of experiment the cattle were slaughtered and carcass characteristics were compared.

Outcomes - Results in the same row were not significantly different (P>0.05).

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Soybean meal</th>
<th>Sunflower meal</th>
<th>Dried distiller’s grain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body weight gains (g/d/h)</td>
<td>1033 ± 50</td>
<td>986 ± 57</td>
<td>1022 ± 62</td>
</tr>
<tr>
<td>Carcass percentage of live weight (%)</td>
<td>57.9 ± 1.62</td>
<td>58.6 ± 2.30</td>
<td>57.4 ± 2.38</td>
</tr>
<tr>
<td>Crude fat content of meat (%)</td>
<td>39.9± 2.56</td>
<td>40.9± 2.11</td>
<td>38.1± 2.87</td>
</tr>
<tr>
<td>Crude protein content of meat (%)</td>
<td>16.9± 1.02</td>
<td>17.5± 0.87</td>
<td>17.3 ± 0.92</td>
</tr>
<tr>
<td>pH of meat</td>
<td>6.25 ± 0.32</td>
<td>6.56 ± 0.28</td>
<td>5.81 ± 0.36</td>
</tr>
<tr>
<td>Shearing strength of meat (kg)</td>
<td>3.71± 0.26</td>
<td>4.20 ± 0.18</td>
<td>3.50 ± 0.30</td>
</tr>
</tbody>
</table>

Conclusions - These results indicate that growth performance and carcass characteristics of beef cattle were similar irrespective of the protein source fed. Therefore dried distiller’s grain which is approximately half the price of soybean meal can be used as a dietary protein supplement without affecting performance and carcass characteristics.

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A link between diet form and weight change in domestic cats (Felis catus)?

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Background – Obesity levels in companion animals frequently mirrors that of their owners. Recent studies suggest the incidence of overweight or obese animals is between 25 and 40%. However, there is little information from controlled studies showing the extent of the effects of modern commercial diets on weight changes in cats.

Objective – Determine energy levels in commercially available feline diets and the effects of a representative dry diet on feline bodyweight.

Design – Gross energy and proximal analysis of a range of commercial canned and dry kibble diets were determined by standard AOAC methods. Sixteen adult cats (8♂: 8♀), normally fed canned diets, were randomly assigned to two weight and sex-balanced groups and were ad lib fed dry diets for 17 weeks. After 17 weeks, eight cats within one group (B) were assigned to an ad lib canned diet whilst the remaining group (A) continued to receive dry food for a further nine weeks. Bodyweight was assessed at weekly intervals. Bodyweight data was plotted and polynomial regression analysis was applied to the two distinct treatment periods to assess the significance of any changes in weight.

Outcomes – Analyses showed the dry food had approximately four times the energy content of canned food on a g/g basis (4.34 vs 1.09 kcal/g). During the first 17 weeks, when both groups were fed the dry diet all animals showed increases in bodyweight (17.8% and 20.7%). Subsequently, after group B cats were changed to the canned diet they showed a 5.72% loss in bodyweight over the next nine weeks. In contrast, cats in group A remaining on the dry diet showed a further 5.73% increase in bodyweight over the same period.

Conclusions – There is a large discrepancy in energy levels between canned and dried cat diets on an as fed basis. Feeding cats dry diets resulted in significant weight gain in all animals (P <0.05). Reversion back to a canned diet resulted in a loss of weight, whereas continued feeding of the dry diet led to further bodyweight increases.