Evaluation of Meat Byproduct – Sinews in Commercial Broiler Chicken Performance

A.Sundaresan1, M.Babu, D.Thyagarajan and C.Pandian

University Research Farm, TANUVAS, Madhavaram Milk Colony, Chennai-600051.

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Abstract
A study was conducted for six weeks period to evaluate the effect of meat byproduct Sinews on commercial broiler performance in a total of 270 unsexed Vencobb chicks. The experimental feeds were prepared by including sinews at zero per cent (control- T1), 2 per cent (T2) and 4 per cent (T3) level in the feed. Addition of two per cent inclusion of Sinews in broiler chicken diet did not showed significant difference in growth performance at 6 weeks of age and did not alter the serum cholesterol, triglycerides and creatinine level of broilers. However, the profit was more in 2% inclusion of sinews.

Key words: Meat by product, Sinews, broiler

Meat byproducts are rendered for use in livestock and poultry diets to reduce the feed cost (Caires et.al., 2010.) The most common animal by products used in broiler chicken diets are meat meal, meat & bone meal, blood meal, feather meal and poultry offal meal. These by products contain high protein and minerals and may partially replace other nutrient rich feed sources like soya bean or fish meal. Sinews is the by-products of gelatin and glue prepared from bones of slaughtered animals. However, the available information on using Sinews in broiler feed is limited. Hence, this study was carried out to determine the effect of dietary inclusion of Sinews on the performance of commercial broiler chicken.

Materials and Methods
This study was conducted for six weeks to evaluate the effect of dietary meat byproduct Sinews on commercial broiler performance (Vencobb 400) at Poultry Research Station (PRS) Nandanam, Tamilnadu Veterinary and Animal Sciences University (TANUVAS), Chennai. Sinews obtained from M/s.Nitta Gelatin India Ltd, Cochin, Kerala, was analysed for its proximate composition and toxins, if any, at Animal feed analytical and quality control lab, Namakkal and checked for microbial load at Central University Lab at Madhavaram. A total of 270 unsexed Vencobb 400 broiler chicks were randomly divided into three treatment groups with 3 replicates of 30 birds each and reared in flat deck cage. Isonitrogenous and isocaloric experimental feeds were prepared by including Sinews at zero per cent (control- T1), 2 per cent (T2) and 4 per cent (T3) level in the feed under standard managerial conditions. The hatch weight, bi weekly body weight, feed conversion ratio (FCR), livability were recorded and serum cholesterol, triglycerides and creatinine levels were also estimated. The relative economics based on prevailing market prices of the ingredients were worked out. The data were analysed as per standard statistical procedure described by Snedecor and Cochran (1994).

Results and Discussion
Proximate composition of sinews : Moisture-8.64%, crude protein 47.04%, crude fiber 3.29%, ether extract 11.64%, ME (K cal/kg) 2714, Calcium 7.06%, phosphorus3.33%, Aflatoxin B1 <12ppb and other toxins were not detected. The effect of inclusion of meat by product sinews on production performance and serum profile of commercial broiler chicken are presented in Table I.

Highly significant (P<0.01) difference were found in body weight in broiler fed with sinews up to 6 weeks between T1, T2 and T3. The Control and 2% sinews showed better body weight than 4% level of sinews and which is in agreement with Orban and Roland (1992) those
recorded better body weight in broiler fed with 1.25% chicken bone meal at 3 weeks of age and Waldroup and Adams (1994) noticed better body weight in broilers fed diet with 8% poultry by product meal up to 4 weeks. However, many authors did not agreement with the results of this study namely, Sartorelli (1998) tried meat and bone meal in broiler, Bellaver et al. (2005) included 4% meat & bone meal and 3% poultry offal meal in broiler diets, Caires et al. (loc.cit.) tried meat & bone meal, feather meal, blood meal and poultry offal meal in commercial broiler and Martosiswoyao and Jensen (1988) tired 10% meat & bone meal in broiler and all the authors did not found any significant difference in growth performance.

Better fed efficiency was (FCR) observed in control and Sinews at 2% inclusion level in this study, which is in agreement with Waldroup and Adams (loc.cit.), they noticed better FCR in broilers fed with 8% poultry by product meal than meat & bone meal, but the FCR was poor in 4% level, may be due to the flavour of sinews. Livability did not affected by addition of sinews in broiler diet. The serum profile (cholesterol, triglycerides and creatinine levels) were not affected by the inclusion of sinews in broiler chicken, however Calislar and Ayidin (2006) found high level of serum lipoprotein in broilers fed with higher per cent (8%) of animal bone fat. The economics of including sinews in broiler chicken diet is shown in Table II. The cost of production per broiler chicken from 0 to 6 weeks of age is less in sinews included group at 2% level compared to other two groups. The profit per bird is higher in 2% level of sinews in feed than control and 4% sinews level, which is in agreement with Caires et al. (loc.cit.).

Table I. Effect of inclusion of meat by product sinews on the production performance and serum profile of commercial broiler chicken (Mean ± SE).

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Parameters</th>
<th>Sl. No</th>
<th>Parameters</th>
</tr>
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<tbody>
<tr>
<td>I</td>
<td>Growth performance</td>
<td>II</td>
<td>Serum Profile</td>
</tr>
<tr>
<td>1</td>
<td>Hatch weight (g)NS</td>
<td>1</td>
<td>Serum cholesterol (mg/dl)NS</td>
</tr>
<tr>
<td>2</td>
<td>2nd week body weight (g) **</td>
<td>2</td>
<td>Serum triglycerides (mg/dl)NS</td>
</tr>
<tr>
<td>3</td>
<td>4th week body weight (g) **</td>
<td>3</td>
<td>Serum creatinine (mg/dl)NS</td>
</tr>
<tr>
<td>4</td>
<td>6th week body weight (g) **</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Feed conversion ratio (FCR)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Livability (%)</td>
<td></td>
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Means bearing different superscript within the same row differs significantly, **Highly significant (P<0.01), NS- Not significant

Table II. Economics of broiler chicken fed diet supplemented with sinews

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Cost of production (Rs.)</th>
<th>Returns/ bird</th>
<th>Profit/bird</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Chick</td>
<td>Feed</td>
<td>Fixed</td>
</tr>
<tr>
<td>Control</td>
<td>24.00</td>
<td>68.18</td>
<td>10.00</td>
</tr>
<tr>
<td>2% Sinews</td>
<td>24.00</td>
<td>66.31</td>
<td>10.00</td>
</tr>
<tr>
<td>4% Sinews</td>
<td>24.00</td>
<td>67.14</td>
<td>10.00</td>
</tr>
</tbody>
</table>

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Summary
This study revealed that addition of two per cent inclusion of sinews in broiler chicken showed comparable growth performance with control at 6 weeks of age. Inclusion of sinews in feed did not alter the serum cholesterol, triglycerides and creatinine level of broilers, which is more important health concern for edible of broiler meat. However, the profit was more by inclusion of 2% sinews. This study concluded that, the sinews can be included in broiler diet at the level of two per cent as a source of protein and minerals with reduction in feed cost and yield higher profit.

References

Evaluation of Meat Byproduct – Bone Meal in Commercial Broiler Chicken Performance

A.Sundaresan¹, M.Babu, C.Pandian and D.Santhis
University Research Farm, TANUVAS, Madhavaram Milk Colony, Chennai-600051.

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Abstract
A study was conducted for six weeks period to evaluate the effect of meat byproduct Bone meal on commercial broiler performance in a total of 270 unsexed Vencobb chicks. The experimental feeds were prepared by including Bone meal at zero per cent (control- T1), 2 per cent (T2) and 4 per cent (T3) level in the feed. Addition of two per cent inclusion of Bone meal in broiler chicken diet did not show significant difference in growth performance at 6 weeks of age and did not alter the serum cholesterol, triglycerides and creatinine level of broilers. However, the profit was more in 2% inclusion of Bone meal.

Key words: Meat by product, Bone meal, broiler

Meat byproducts are rendered for use in livestock and poultry diets to reduce the feed cost (Caires et.al. 2010.). The most common animal by products used in broiler chicken diets are meat meal, meat & bone meal, blood meal, feather meal and poultry offal meal. These by products contain high protein and minerals and may partially replace other nutrient rich feed