THE INFLUENCE OF FEED PROTEIN AND ENERGY LEVEL ON MEAT CHEMICAL COMPOSITION FROM DIFFERENT ANATOMICAL REGIONS AT “Cobb 500” HYBRID

INFLUENȚA NIVELULUI PROTEIC ȘI ENERGETIC AL RAȚIEI ASUPRA COMPOZIȚIEI CHIMICE A CĂRNII DIN REGIUNI ANATOMICE DIFERITE LA HIBRIDUL “Cobb 500”

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In order to increase quantity and quality of white meat, breeders are orienting to exploitation of hybrids with distinguished growing and slaughtering performances. In this experiment was followed the influence of protein level on meat chemical composition in different anatomic parts at Coob 500 hen commercial hybrid for meat. Breeding system for the two lots was on soil. For each phase, was assured optimal breeding condition according to the recommendations from Broiler Management Guid Coob 500-2008. L₁ had a feed with a protein and energy level higher than L₂. After slaughtering, meat was sampled from three different corporal regions (chest, thigh and drumstick) and was analyzed water, protein and fats content at each sample. The results have showed that in chest muscles water and protein are in a higher percent and fat proportion is lower compared to haunch muscles. Comparing the two experimental lots can be seen obvious differences of water and protein in favour of lot L₁. Fats content, at all kinds of muscles was in a high proportion to L₂ in comparison with L₁.

**Keywords:** chemical composition, chest muscles, thigh, drumstick

Introduction

Breeding commercial meat hybrids with distinguished growing performances has increased the performances in superior meat exploiting through meat production diversification in form of new products with high nutritive and organoleptic qualities.

Hen commercial hybrid for meat, Coob 500 is a tetra linear hybrid produced by Cobb Breeding Company L+d from England. Coob 500 hybrid was imported in our country few years ago, has attain to impress the breeders with special growing performances. Also, Coob 500 hybrid assures a meat with high biological value and
impressing slaughtering results. In case of unsexed exploitation, at slaughtering age (42 days) reach a 2634 g weight with an feed conversion of 1.76 kg combined fodder/kg weight gain.

In the experiment was followed the influence of energy and protein level in feed on meat chemical composition in function of analyzed anatomical region.

**Materials and Methods**

Studied biological material was formed of 200 Coob 500 meat hybrids. The experiment was done on unsexed broilers, sex ratio being 1:1. Broilers were divided in two equal experimental lots (L₁ and L₂).

Breeding system for the two lots was in type of permanent layer. Using this breeding technology was assured microclimate optimal conditions and sanitary veterinary actions recommended by Broiler Management Guid Coob 500-2008.

Growing period was of 1 to 42 days. At the end of experimental period entire population was slaughtered.

Feeding of the two experimental lots was done with dry concentrate fodder in type of flour and with different protein and energy level in function with the growing period as follow:

<table>
<thead>
<tr>
<th>Lot</th>
<th>1-14 days - starter</th>
<th>15-35 days - grower</th>
<th>36-42 days - finisher</th>
</tr>
</thead>
<tbody>
<tr>
<td>L₁</td>
<td>24% PB and 3000 EM</td>
<td>23% PB and 3175 EM</td>
<td>21% PB and 3225 EM</td>
</tr>
<tr>
<td>L₂</td>
<td>22% PB and 2950 EM</td>
<td>21% PB and 3100 EM</td>
<td>19% PB and 3200 EM</td>
</tr>
</tbody>
</table>

In order to evaluate nutritive qualities of meat, was done physical-chemical analyzes in function of anatomical region at each experimental lot. Sampling was done from three anatomical regions: chest, thigh and drumstick.

Physical-chemical analyzes was done on worm meat (1-3 hours after slaughtering). For chemical composition were used classical methods recording to the standards in force.

**Results and Discussion**

Knowing the chemical composition of meat is a base criterion in its nutritive value appraisal, also having a major importance in meat processing.

In table 1 are showed the results about meat chemical composition at Coob 500 hybrid in function with anatomical region for the two experimental lots.
Table 1
Variation of chemical composition of broiler meat in function of anatomical region and energy-protein ratio of feed

<table>
<thead>
<tr>
<th>Specification</th>
<th>Water %</th>
<th>Protein %</th>
<th>Fats %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>chest</td>
<td>thigh</td>
<td>drumstick</td>
</tr>
<tr>
<td>L₁</td>
<td>73,66±</td>
<td>71,69±</td>
<td>24,58±</td>
</tr>
<tr>
<td></td>
<td>0,17</td>
<td>0,14</td>
<td>0,15</td>
</tr>
<tr>
<td>L₂</td>
<td>73,09±</td>
<td>70,86±</td>
<td>24,1±</td>
</tr>
<tr>
<td></td>
<td>0,14</td>
<td>0,13</td>
<td>0,15</td>
</tr>
</tbody>
</table>

It knows that water proportion in poultry meat differ in function with anatomical region, being a direct correlation between water quantity and the others nutritive principles.

Analyzing the values, results a high hydration of meat, more obviously in chest muscles. These results are valuable for both experimental lots.

Between the two experimental lots appear differences regarding the hydration for all types of muscles. These differences are explained through a higher hydration of meat from L₁ broilers who have beneficiated of a feed with higher protein level in comparison with L₂.

Adding fodder with a higher protein level and a tight energy-protein ratio has as result a higher growing speed and higher water content in meat.

Protein level of analyzed samples is high, with values over 24% in chest meat. Chest meat is formed from white fibres, having a protein level higher in comparison with red fibres from haunch fibres.

Analyzing the differences from the two experimental lots, can be seen in L₂ the protein level is higher for all type of muscles.

Fats content present pretty high variations in poultry striate muscles. Analyzing the data from table 2 can be observed that fats content in chest meat is in low quantities, 1,22% in L₂ and 0,59% in L₁. Chest muscles are formed of white fibres flat of marbling so, it only shown chip lines of fats.

Meat samples from L₂ have a higher fat content compared to L₁. Highest values of fat percentage was obtained at thigh, followed by drumstick and chest meat.

Meat with a low fat content has a lower energetic value, but also has a higher biological value. The high biological value is given by the protein content that is higher in low fat meat.
Conclusions

Major components of meat present variation in function of muscles type and quality of administrated feed.

Chest muscles have higher water and protein content and a lower fat content in comparison with haunch muscles.

At L₁ water and protein content is higher and fat content is lower in comparison with L₂.

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