PROBIOTICS INFLUENCE UPON THE MAIN TECHNICO-ECONOMIC PARAMETERS IN BROILER BREEDING

INFLUENȚA UNUI PROBIOTIC ASUPRA PRINCIPALILOR PARAMETRI TEHNICO-ECONOMICI AI CREȘTERII LA BROILERII DE GĂINĂ

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The purpose of this research was to establish the effect of Biomin IMBO probiotic upon broilers chicken vaccinated against Newcastle disease. Probiotic effect was assessed by emphasis of the most important zoo-economic changes induced by these bioadditive. Group C (control) and E2 (experimental 2) were fed with standard combined diet; group E1 and E3 were fed with standard combined diet and Biomin IMBO added to the starter diet at 1 kg/tonne, and in grower diet at 0.5 kg/tonne. Birds from group E2 and E3 were vaccinated against Newcastle disease. All broilers were periodically weighted and at the control slaughtering the carcasses were cut in commercial pieces and: average daily gain, specific feed intake and slaughtering efficiency were quantified. Results analysis suggest that the highest values of weight were registered in experimental group E3 (probiotic + vaccination), while C, E1 and E2 have variability two and half fold higher. Also, the obtained results proved that positive effect of Biomin IMBO on summation of average daily gain and specific intake was 13.49%.

Keywords: broiler chicken, probiotic, average daily gain, specific feed intake.

Introduction

Global challenges about productivity, animal health guarantee and implicitly alimentary security involves also animal keeping ecological system in EU members and candidates.

Many studies showed that while ecologic agriculture ensures better conditions for obtaining uncontaminated animal products and for animals’ welfare, this system has an increase risk potential in infectious and parasitory diseases than conventional keeping systems. Thus, in ecologic agriculture domain it was necessary to find some alternative solutions for animals’ health improvement, including enhancing of natural resistance against diseases, which do not involve antibiotics usage. One possible solution might be adequate nutrition, implying organic minerals supplements and probiotics administration. The results obtained in zootechnical practice with probiotics are clear, and experiments revealed various benefic effects.
Probiotics usage has remarkable effects, stimulating immune system in young animals. These products predigest some anti-nutritive factors, and indeed have some antimycotic effects (Fengac et al 2000, Guillot, I.F. 2000, and Roilides, E., Lyman, C. A., 2003). Biomin IMBO is a combination of probiotic Enterococcus faecium (DSM 3530 strain), prebiotic chicory inuline reach, and immunomodulating substances derived from sea algae, which is added to the starter diet at 1 kg/tonne, and in grower diet at 0.5 kg/tonne (Awad et al, 2008a, Awad et al 2008b).

**Materials and Methods**

The experiment was conducted on 60 Ross hybrids divided in four groups which were maintained in the same condition of keeping and nutrition starting with age of one day. The research lasts 56 days, during that time birds being kept in the same microclimate conditions. Group C (control) and E 2 (experimental 2) were fed with standard combined diet; group E 1 and E 3 were fed with standard combined diet and Biomin IMBO added to the starter diet at 1 kg/tonne, and in grower diet at 0.5 kg/tonne. Birds from group E 2 and E 3 were vaccinated against Newcastle disease.

All broilers were periodically weighted and at the control slaughter the carcasses were cut in commercial pieces and the following quantifications were made: average daily gain, specific feed intake and slaughtering efficiency. All birds were monitored daily, following general condition and mortality.

**Results and Discussions**

Probiotic influence upon the main techno-economic parameters in broilers breeding is presented in tables 1 and 2. Average weight for experimental birds aging 56 days was 2019.42g, and for control birds 1943.93g. In the end of the experiment, weight difference was 3.88%, favorable to broilers fed with diet that included probiotic. This result is situated in values area reported by other authors (3, 6).

**Table 1**

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>X ± Sx</th>
<th>S</th>
<th>CV%</th>
<th>Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>min.</td>
</tr>
<tr>
<td>C</td>
<td>15</td>
<td>2123.85 ± 93.50</td>
<td>337.11</td>
<td>15.87</td>
<td>1380</td>
</tr>
<tr>
<td>E1</td>
<td>15</td>
<td>1898.57 ± 105.79</td>
<td>395.84</td>
<td>20.85</td>
<td>880</td>
</tr>
<tr>
<td>E2</td>
<td>15</td>
<td>1788.00 ± 96.99</td>
<td>375.66</td>
<td>21.01</td>
<td>970</td>
</tr>
<tr>
<td>E3</td>
<td>15</td>
<td>2160.42 ± 41.37</td>
<td>143.37</td>
<td>6.63</td>
<td>1900</td>
</tr>
</tbody>
</table>

All data included in table 1 suggest that the highest values of weight were registered in experimental group E 3 (probiotic + vaccination), while C, E 1 and E 2 have variability two and half fold higher. The aspect of weight uniformity has
practical importance, suggesting that carcasses will have commercial uniformity, characteristic extremely appreciated in the present.

Also, it is remarkable that E3 group has the narrowest variability limits, 1900-2400g, placed at ±240-260g around average; the variability limits in the other groups were up to four fold higher.

Detailed analysis of all influence factors suggests significant interaction in the following characters pairs, favorable to experimental groups, weight-gender and weight (E1 + E3) versus (E2 + M):

\[
\begin{array}{c|c|c|c|c}
 E_3 & E_1 & E_2 & M* \\
 [E1 + E3] & [E2 + M]* \\
 \end{array}
\]

\*p<0.05

Data listed in table 2 about E3 and E2 groups that were vaccinated against Newcastle disease, but only E3 group being fed with probiotic, suggest that all differences are favorable to E3 group.

**Table 2**

<table>
<thead>
<tr>
<th>Compared groups</th>
<th>Average daily intake (g)</th>
<th>Average daily gain (g)</th>
<th>Specific intake (kg.f.c.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>E2</td>
<td>97*</td>
<td>31,13</td>
<td>3,19</td>
</tr>
<tr>
<td>E3</td>
<td>113</td>
<td>36,05</td>
<td>3,13</td>
</tr>
</tbody>
</table>

Probiotic determines 113g average daily intake, with 11.65% higher than in E2 group case. This higher intake has results in average daily gain of 36.05g, comparing to 31.13g in E2 group, meaning an 11.8% difference. Obviously, the specific intake of E3 group (fed with probiotic) is 1.91% lower. Summation of positive effects on the last two characters gives the result of 13.49%.

**Conclusions**

Monitored parameters revealed relevant values, the obtained results being centralized and systematized in tables.

The highest values of weight were registered in experimental group E3 (probiotic + vaccination), while C, E1 and E2 have variability two and half fold higher.

The obtained results proved that positive effect of Biomin IMBO on summation of average daily gain and specific intake was 13.49%.

**References**


