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INFLUENCE OF ACIDIFIER APPLIANCE ON PREVENTION OF SALMONELLA ENTERITIDIS INFECTION AND PRODUCTION RESULTS IN FATTENING CHICKENS

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Owing intensive broiler production chickens are exposed to different stresses that may cause immunosuppression and bacterial infections. Inadequate disinfection procedures or their absence in hatcheries contribute the outbreak of bacterial diseases and fast spread of *Salmonella* spp. (2,3).

Bacterial infections and immunosuppression mentioned above cause economic losses through mortality, usually during the first phase of fattening until three weeks of age. In field conditions, such mortality is solved by treatment with antibiotics. It is shown that frequent use of antibiotics is closely related to development of resistance in bacterial strains, especially *Salmonella enteritidis* (2).

In this paper are presented the investigations and the results of acidifier appliance for the prevention of *Salmonella enteritidis* infection in fattening chickens that excludes use of antibiotics (1,4).

MATERIAL AND METHODS

AS broiler chickens were transported from the same hatchery to farm premises with diagnosed *Salmonella enteritidis*. One day old chickens were divided in three groups, each of them consisted of 10,900 chickens. Experimental group I was treated with acidifier Multiacid-Z, added in feed 2kg per tone; experimental group II was treated with Multiacid-Z, 3 kg per tone of feed; control group received 0.5% amoxycillin for seven days. Mortality rate, feed conversion ration (FCR), body weight, presence of pathogenic bacteria and pH values of crop and caeca contents were determined during the experiment. Bacteriological control of liver and determination of pH level of crop and caeca content were performed on the 12th and the 22nd day of age.

Acidifier Multiacid-Z contains propionic, formic and malic acids, eugenol oil and plant extracts from origano (*Origanum vulgare*).

RESULTS AND DISCUSSION

Appliance of different feed or water additives, probiotics and prebiotics, particulary in first days of life, impede pathogenic bacteria to reproduce and express their negative influence on production results, health of animals and human population. Adding acidifiers in feed is a modern approach in solving problems caused by *Salmonella* spp. through competitive exclusion (1,4).

Animal health on individual level depends on processes in intestine, so the influence of acidifiers on eubiosis prohibits consequences of stress caused by demands for high productivity in industrial broiler production. In our investigation better FCR and lower mortality rates were determined in experimental groups compared to the control group (Table 1) and confirmed positive effects of acidifier on broiler's health and feed conversion, which was the goal of our investigation.

Multiacid-Z contains propionic, formic and malic acids, compounds that create acid environment by lowering pH of digestive tract content, which is infavourable for *Salmonella enteritidis*. In our experiments pathogenic organisms were not determined in bacteriological investigations, while pH level of crop and caecal contents were lower in both experimental groups compared to the control group (Table 2). This was achieved by adding Multiacid-Z in feed which effectively and quickly reduces pH level and prevents infection, enchances vitality and weight gain. Multiacid-Z establishes good eubiotic relations in gut flora, optimises nonspecific immune
response and supports overall immunity to pathogens. Our results indicate lower mortality rate and absence of Salmonella spp. in both experimental groups on day 12 and 22 (Table 1 and 2). Acidifiers show good efficiency in prevention outbreak and spread of Salmonellosis in broiler chickens, which was confirmed by our experiment.

Table 1. Production results of fattening chickens.

<table>
<thead>
<tr>
<th>Group</th>
<th>Body weight (g)</th>
<th>Mortality (%)</th>
<th>FCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>42</td>
<td>195</td>
<td>4.51</td>
</tr>
<tr>
<td>II</td>
<td>42</td>
<td>197</td>
<td>4.14</td>
</tr>
<tr>
<td>Control</td>
<td>42</td>
<td>185</td>
<td>5.67</td>
</tr>
</tbody>
</table>

Table 2. pH values of digestive tract content and presence of Salmonella enteritidis in liv

<table>
<thead>
<tr>
<th>pH of crop content</th>
<th>pH of ceca content</th>
<th>Positive to S. Enteritidis</th>
</tr>
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<tbody>
<tr>
<td>day 12</td>
<td>day 22</td>
<td>day 12</td>
</tr>
<tr>
<td>Group I</td>
<td>4.8</td>
<td>4.3</td>
</tr>
<tr>
<td>Group II</td>
<td>4.6</td>
<td>4.4</td>
</tr>
<tr>
<td>Control group</td>
<td>5.8</td>
<td>5.7</td>
</tr>
</tbody>
</table>

Consumers of poultry meat and poultry products demand antibiotics to be excluded from broiler production. On the other hand, farmers disagree with these demands because exclusion of antibiotics may lead to higher mortality, decreased production results and profit. However applications of acidifiers represent good alternative for antibiotics and a step forward to production of safe poultry meat.

References


KRATAK SADRŽAJ

U ovom radu izložena su istraživanja i rezultati primene zakise ljivača Multiacid-Ž u preveniranju Salmonellae enteritidis u tovu pilića koji isključuje antibiotike. Multiacid-Ž efikasno i brzo snižava pH, uspostavlja dobre eubiotičke odnose črevne mikroflore i optimalizaciju nespecifičnog imunog sistema i potpomaže otpornost prema patogenima. Dobijeni rezultati ukazuju na mali mortalitet i da su jata oglednih grupa bila slobodna od bakterija iz roda Salmonellae. Primena zakiseljivača su dobra i prava alternativa zamene antibiotika i dobar put ka zdravstveno bezbednom pilećem mesu.