Influence of Different Levels of Dietary Garlic on Body Weight and Body Weight Gain of Japanese Quail

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(Received : 24-08-2015; Accepted : 22-09-2015)

Abstract

A biological experiment was conducted by adding garlic at 0, 0.5, 1.0 and 1.5 per cent level in the basal diet of Japanese quail for a period of 4 weeks to assess the production performance. The result of the experiment revealed that dietary inclusion of garlic had significant influence (P<0.05) on body weight and body weight gain in Japanese quail. Among the treatment groups, the group fed with 1.5 per cent level showed better body weight and body weight gain than rest of the groups.

Key words: Garlic, Body weight, Weight gain, Japanese quail.

Antibiotics have been extensively used as feed additives and growth promoters in poultry feed industry. Due to the residual effects in the final product, shift to alternate growth promoters like phytobiotics are increasing now-a-days. Garlic is a phytobiotic feed additive which beneficially improve the feed intake and secretion of digestive juices. Garlic has several beneficial effects on both humans and poultry having antimicrobial, antioxidant as well as antihypertensive properties and these functions are attributed to bioactive components present in garlic like diallyl polysulfides which possess antimicrobial activity that is responsible for the increasing weight gain, feed efficiency and protein efficiency ratio (PER).

Materials and Methods

A biological experiment was conducted by using 240 day old Japanese quail chicks belonging to single hatch. These chicks were randomly grouped into 4 treatments with 6 replicates of 10 chicks each. All the birds were reared under standard managerial conditions up to four weeks of age.

The locally available garlic was purchased, powdered and incorporated into the standard Japanese quail diet to form different experimental diets. The treatment groups of the experiment were as follows:

Throughout the study period of 4 weeks, data on body weight were recorded at weekly interval. The data collected were subjected to statistical analysis as per the method suggested by Snedecor and Cochran (1989).

Results and Discussion

The mean (± S.E.) body weight (g) and body weight gain (g) of Japanese quail reared from one to four weeks of age as influenced by dietary supplementation of garlic are presented in Table I and II, respectively.

The analysis of variance of data revealed that there was a significant difference (P<0.05) in the body weight between treatment groups throughout the study period. Among the garlic supplemented groups, it was noticed that as the inclusion level of garlic is increased in the diet, there was a proportionate improvement in the body weight and body weight gain. At four weeks of age, the group T₄ recorded the highest body weight (210.02 g) followed by T₃ (200.81 g), T₂ (198.83 g) and T₁ (188.43 g). Similarly, the body weight gain was highest in T₄ group (201.00 g) followed by T₃ (192.02 g), T₂ (189.58 g) and T₁ (179.58 g).

The results were in accordance with the findings of Onibi et al. (2009), Onu (2010), Raeesi et al. (2010), Oldale et al. (2012), Suriya et al. (2012), and Elagib et al. (2013) who also recorded higher body weight due to garlic

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supplementation in broilers.

Summary

It has been concluded that, by feeding different levels of dietary garlic to Japanese quail, the group T₄ (1.5% garlic) recorded significantly (P<0.05) higher body weight (210.02 g) and body weight gain (201.00 g) than rest of the treatment groups and the control group showed poor body weight (188.43 g) and body weight gain (179.58 g) compared to treatment groups.

References


Table I. Mean (± S.E) body weight (g) of Japanese quail reared from 1 to 4 weeks of age as influenced by different levels of garlic in the feed

<table>
<thead>
<tr>
<th>Treatment groups</th>
<th>I Week</th>
<th>II Week</th>
<th>III Week</th>
<th>IV Week</th>
</tr>
</thead>
<tbody>
<tr>
<td>T₁</td>
<td>30.76 ± 0.62</td>
<td>74.64 ± 1.34</td>
<td>131.42 ± 2.22</td>
<td>188.43 ± 2.93</td>
</tr>
<tr>
<td>T₂</td>
<td>31.85 ± 0.63</td>
<td>79.04 ± 1.23</td>
<td>139.39 ± 1.91</td>
<td>198.83 ± 2.77</td>
</tr>
<tr>
<td>T₃</td>
<td>32.04 ± 0.50</td>
<td>80.06 ± 1.43</td>
<td>142.18 ± 2.03</td>
<td>200.81 ± 2.39</td>
</tr>
<tr>
<td>T₄</td>
<td>33.50 ± 0.57</td>
<td>85.37 ± 1.22</td>
<td>147.13 ± 2.02</td>
<td>210.02 ± 2.79</td>
</tr>
</tbody>
</table>

Value given in each cell is the mean of 60 observations

Means within a column with no common superscript differ significantly (P<0.05)

Table II. Mean (± S.E) body weight gain (g) of Japanese quail reared from 1 to 4 weeks of age as influenced by different levels of garlic in the feed

<table>
<thead>
<tr>
<th>Treatment groups</th>
<th>I Week</th>
<th>II Week</th>
<th>III Week</th>
<th>IV Week</th>
</tr>
</thead>
<tbody>
<tr>
<td>T₁</td>
<td>21.91 ± 0.60</td>
<td>65.79 ± 1.37</td>
<td>122.57 ± 2.22</td>
<td>179.58 ± 2.92</td>
</tr>
<tr>
<td>T₂</td>
<td>22.61 ± 0.66</td>
<td>69.80 ± 1.25</td>
<td>130.15 ± 1.91</td>
<td>189.58 ± 2.79</td>
</tr>
<tr>
<td>T₃</td>
<td>23.25 ± 0.52</td>
<td>71.27 ± 1.42</td>
<td>133.39 ± 2.06</td>
<td>192.02 ± 2.40</td>
</tr>
<tr>
<td>T₄</td>
<td>24.48 ± 0.58</td>
<td>76.35 ± 1.21</td>
<td>138.11 ± 2.02</td>
<td>201.00 ± 2.81</td>
</tr>
</tbody>
</table>

Value given in each cell is the mean of 60 observations

Means within a column with no common superscript differ significantly (P<0.05)