Effect of a new herbal product containing 1,25-dihydroxycholecalciferol-glycodies on broiler chicken performance.
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Aim: High performing and fast growing broiler chickens often endure leg problems. In particular, when factors, as climate and feed are sub-optimal.
Can addition of 1,25-dihydroxycholecalciferol-glycodies on top of usual vitamin D3 supplementation improve bone strength and animal health while still maintaining performance?

Background: Modern meat production is highly productive. A broiler chicken grows within 42 days to a body weight of 3.4 kg with a feed conversion ratio of 1.5. Such performance requires a highly optimized nutrition. In order to allow the massive body growth is skeletal development is a critical point. Supplementation with regular vitamin D3, up to the legal limit, may not always suffice to prevent walking and standing problems, especially when the available feed components are of lower quality (Whitehead).
It is well known that vitamin D3, as such is not biologically active. It needs two internal conversion steps: the first in liver to the storage form 25-hydroxyvitamin D3 which is not active ether. In the second step, in kidney, the active form 1,25-dihydroxyvitamin D3 is formed which performs all functions of the vitamin, is formed.
It may be reasonable that under circumstances in which both organs are impaired (by stress from heat, feed imbalances or presence of toxins) a direct application of this active form may be advantageous.
In experimental trials has been found that direct application of the active form of vitamin D3 is most potent in preventing leg weaknesses, as tibial dyschondroplasia (Edwards). The compound is not available for animal nutrition, however, a herbal alternative has been suggested by Cheng and others (Boland). The present work explores a herbal product containing 1,25-dihydroxycholecalciferol-glycodies on their effect on bone health and performance under conditions often seen in practice.

Results: Parameters for performance, blood minerals and bone composition are summarized in tables 1-3.

<table>
<thead>
<tr>
<th>Group</th>
<th>Treatment</th>
<th>Body weight gain (g)</th>
<th>FCRI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PC</td>
<td>day 14: 14 kg, day 24: 24 kg, day 35: 35 kg</td>
<td>1.143</td>
</tr>
<tr>
<td>2</td>
<td>NC</td>
<td>12.967 kg, 24 kg, 35 kg</td>
<td>1.157</td>
</tr>
<tr>
<td>3</td>
<td>NC + 400/400</td>
<td>12.967 kg, 24 kg, 35 kg</td>
<td>1.157</td>
</tr>
<tr>
<td>4</td>
<td>NC + 30/50</td>
<td>12.967 kg, 24 kg, 35 kg</td>
<td>1.157</td>
</tr>
</tbody>
</table>

P-value: <0.0001, <0.0001, <0.0001, <0.0001, <0.0001

Pooleed SEM: 0.0001, 0.0001, 0.0001, 0.0001, 0.0001

CV: 3.198, 3.552, 3.467, 3.552, 3.552

Material and methods: 192 male Cobb 500 chickens in 8 replications per treatment were fed a starter (14d), grower (to d24) and a finisher diet (to d42). Performance data was recorded on days 14, 24, 35 and 42. Feed and water was supplied ad libitum with lighting for 21 hours. Statistical analysis was done by a randomized block design by analysis of variance using SAS statistical package.
Test product was a standardized product (Panbonis 10) from the plant Solanum glaucophyllum (supplied by Herbonis AH, CH-4001 Basel). The active content was standardized to 10 μg/g analytically determined 1,25-DHCC after hydrolysis. All groups received 50 μg/kg feed vitamin D3. Treatments in [mg/kg feed] per starter/grower/finisher phase: Controls PC and NC: 0/0/0; G3: 400/400/400; G4: 200/50/100. Feed composition according to Cobb recommendations (G1) except vitamin D3 was 60 μg/kg and in G 2-4 the Ca/P was slightly modified from 1:2 to 1:1.2 as published by Lu and Liu.

Conclusion: Addition of the herbal, vitamin D activity containing product supplemented on top of a sufficient dose of vitamin D3 was able to reduce feed conversion ratio and increase the EBI significantly (p<0.05). Tibial bone calcium was significantly (p<0.05) improved at day 14 and near significant on day 35 (p<0.1). Livability, flock uniformity and lameness score were not (significant) better in this research station trial at a generally very high performance level.

References: