Alleviating gizzard erosion with Hepasan®

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ABSTRACT
Following reports of massive gizzard erosion in chicken resulting from the use of particular sources of fishmeal, an experiment was conducted to test the efficacy of a multivitamin preparation, Hepasan®, in preventing the condition. The fishmeal used for the experiment was suspected to have caused the condition in a flock of broiler chickens. Three levels of Hepasan® (0.0, 0.5, and 1.0 %) were incorporated in diets and fed to 9-week-old broilers for a period of 6 weeks. Birds which died during the experiment were autopsied and scored for gizzard erosion. At the end of the experiment, all broilers were killed by cervical dislocation and scored for gizzard erosion. Growth rate was generally unaffected by the use of the preparation, although there was non-significant trend towards a reduction in the incidence of gizzard erosion through the use of Hepasan®.

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Introduction
Fishmeal from the local anchovy industry had been the sole source of protein in meat poultry diets in Ghana. However, the poor catch of fish experienced by Ghanaian fishermen has resulted in the upsurge of importation from South America and European sources. Lack of adequate quality control measures at the ports of disembarkation has brought about poultry diseases that are related to unwholesome fishmeal.

One such malady which has had devastating effects on the poultry industry is gizzard erosion. The condition is characterized by the erosion or smoothing of the lining of the gizzard. This is often associated with the ulceration of the inner muscle layer of the gizzard. The inner surface of the gastro-intestinal tract (GIT) is usually covered with a blackish exudate. Mortality in young stock (i.e., broiler and starter chicks) is very high whilst growth and laying performance are often poor in older chicken.

The condition has been reported to be associated with many factors, including fishmeal fire nets and high levels of heat treatment above 130 °C (Janssen & Germs, 1973; Wessels & Post, 1989). Others are vitamin B deficiency (Daghir & Ballcum, 1963), high dietary copper and low choline acid content of the gizzard lining (Almquist & Mecchi, 1938; Chiou et al., 1999), and increased acidity in the proventriculus due to a contaminated fishmeal (Phelps, 1938; Swick, 1995). Several remedies have been tried with varying degrees of success. These include the dietary inclusion of bile salts, vitamin E, sodium bicarbonate, and
vitamin B₆ (Almqvist & Mecchi, 1938; Daghir & Haddad, 1981; Janssen & Germs, 1973; Phelps, 1938).

This study aimed at ascertaining the effectiveness of Hepasan® (a multivitamin preparation) in alleviating gizzard erosion.

Materials and methods
Three levels of Hepasan® (0.0, 0.5, and 1.0%) were incorporated into 9-week-old broiler diets and fed for 41 days. The diets had 20% unwholesome fishmeal. There were four replicate coops of eight cockerels each per Hepasan® level. The birds were fed and watered on ad libitum basis. The cockerels were weighed weekly and mortalities recorded daily. The condition of organs of the GIT (proventriculus, gizzard, duodenum, and small intestine) was studied on eight cockerels randomly selected per treatment. The organs were scored as normal or abnormal by a veterinarian.

Results and discussion
The results indicated a direct relationship between body weight gain and dietary Hepasan® levels (Table 1). Apart from the accidental mortality of four birds in one of the four coops of cockerels on the 0.5% Hepasan® diet, mortality was reasonable (6%) and would be acceptable under commercial conditions in Ghana.

The only abnormal proventriculus observed was found in the zero (0%) group. These birds also showed the highest frequency of gizzard erosion and duodenal disorders. The results further indicated that disorders of the small intestines were also associated with the use of the fishmeal which causes gizzard erosion.

The results of this study suggest that Hepasan® minimized the incidence of gizzard erosion so that normal growth was possible, but the level of inclusion did not eliminate it.

REFERENCES
Phelps, A. (1938) Sodium bicarbonate reduces gizzard erosion in broilers. Feedstuffs 60(24), 14-49.

Table 1

<table>
<thead>
<tr>
<th>Hepasan* levels (%)</th>
<th>Wi gain (g/bird)</th>
<th>Mortality</th>
<th>Proventriculus</th>
<th>Gizzard</th>
<th>Duodenum</th>
<th>Small intestine</th>
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<tr>
<td></td>
<td></td>
<td></td>
<td>N</td>
<td>A</td>
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<td>A</td>
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<td>0.5</td>
<td>1123.8</td>
<td>6/32*</td>
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<td>0</td>
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<td>2</td>
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<tr>
<td>1.0</td>
<td>1252.5</td>
<td>2/32</td>
<td>8</td>
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</table>

N and A stand for number of birds with normal and abnormal organs.
* four birds died in one (out of four) coop accidentally by feeding trough.