

# Alleviating gizzard erosion with *Hepasan*<sup>®</sup>

K. BOA-AMPONSEM & A. OSEI-SOMUAH

*Animal Research Institute, CSIR, P. O. Box 20, Achimota, Ghana*

## 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*<sup>®</sup>, 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*<sup>®</sup> (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*<sup>®</sup>.

Provisional communication. Received 25 Aug 2000; revised 19 Feb 2002.

## 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

## RÉSUMÉ

BOA-AMPONSEM, K. & OSEI-SOMUAH, A.: *Allègement d'érosion de gésier avec hépasane*. Suite au reportage sur l'érosion massive de gésier de poulet provenant d'utilisation d'une source particulière de farine de poisson, une expérience se déroulaient pour mettre à l'essai l'efficacité d'une préparation de complexe vitaminé, *Hépasane*, dans la prévention de la condition. La farine de poisson utilisée pour l'expérience était soupçonnée d'avoir provoqué la condition dans une volée de poulets de chair. Trois niveaux de *Hépasane* (0.0, 0.5, et 1.0 pour cent) étaient incorporée dans les régimes et donnée à manger aux poulets de chair ayant l'âge de 9 semaines pour une période de 6 semaines. Les volailles qui sont morts pendant l'expérience étaient mises à l'autopsie et marquées pour l'érosion de gésier. A la fin de l'expérience tous les poulets de chair étaient tués par la dislocation cervicale et marquées pour l'érosion de gésier. La proportion de croissance, en générale, n'était pas influencée par l'utilisation de la préparation, malgré le fait qu'il n'y avait pas de tendance considérable à la réduction dans le taux d'érosion de gésier par l'utilisation de *Hépasane*.

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<sub>6</sub> deficiency (Daghir & Ballcum, 1963), high dietary copper and low cholic 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 B<sub>6</sub> (Almquist & Mecchi, 1938; Dagher & Haddad, 1981; Janssen & Germs, 1973; Phelps, 1938).

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

#### Materials and methods

Three levels of *Hepasan*<sup>®</sup> (0.0, 0.5, and 1.0%) were incorporated into 9-week-old broiler diets and fed for 41 days. The diets had 20 per cent unwholesome fishmeal. There were four replicate coops of eight cockerels each per *Hepasan*<sup>®</sup> 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*<sup>®</sup> levels (Table 1). Apart from the accidental mortality of four birds in one of the four coops of cockerels on the 0.5 per cent *Hepasan*<sup>®</sup> 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*<sup>®</sup> minimized the incidence of gizzard erosion so that normal growth was possible, but the level of inclusion did not eliminate it.

#### REFERENCES

- Almquist, H. J. & Mecchi, E. (1938) The influence of bile on erosions of the chick gizzard lining. *J. Biol. Chem.* 126, 407-412.
- Chiou, P. W. S., Chen, C. L., Chen, K. L. & Wu, C. P. (1999) Effect of high dietary copper on morphology of gastro-intestinal tract in broiler chicken. *Asian-Australian J. Anim. Sci.* 12(4), 548-553.
- Dagher, N. J. & Ballcum, S. L. (1963) Evaluation of the effect of breed on vitamin B<sub>6</sub> requirements of chicks. *J. Nutr.* 79.
- Dagher, H. J. & Haddad, K. S. (1981) Vitamin B<sub>6</sub> in the etiology of gizzard erosion in growing chickens. *Poult. Sci.* 60, 988-992.
- Janssen, W. M. M. A. & Germs, A. C. (1973) Gizzard erosion, meat flavour and vitamin E in broilers. *Acta Agricultura Scandinavica Suppl.* 19, 72-78.
- Phelps, A. (1938) Sodium bicarbonate reduces gizzard erosion in broilers. *Feedstuffs* 60(24), 14-49.
- Swick, R. A. (1995) Nutrition and the health of poultry. *Zootecnica-International* 18(11), 40-45.
- Wessels, J. P. H. & Post (1989) Effect of heat treatment of fishmeals, fines and the addition of Lysine as related to gizzard erosion in chicken. *J. Sci. Fd Agric.* 46(4), 393-406.

TABLE I

*Performance of Broilers Fed Different Levels of Hepasan<sup>®</sup>*

Hepasan <sup>®</sup> levels (%)	Wt gain (g/bird)	Mortality	Condition of organs of GIT							
			Proventriculus		Gizzard		Duodenum		Small intestine	
			N	A	N	A	N	A	N	A
0.0	961.2	2/32	7	1	3	5	3	5	4	4
0.5	1123.8	6/32*	8	0	6	2	4	4	3	5
1.0	1252.5	2/32	8	0	5	3	5	3	3	5

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.