

THE INFLUENCE OF COCCIDIOSTAT (BAYCOX) AND CHITOSAN ON THE COURSE OF COCCIDIOSIS IN BROILER CHICKEN

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Introduction

Coccidiosis is a serious problem in broiler chicken production in Poland. For control this disease coccidiostats are used. In last time additionally for coccidiosis control compounds are applied, which stimulated the non-specific resistance system. Chitosan-the simplest chitin derivative has many of biological, chemical and physical properties and can be used in a wide range of applications in medicine, veterinary practices, cosmetics, food industry, agriculture and biotechnology (1, 7, 13). It has been reported that chitosan showed potent immunological activities such as activation of macrophages (5, 6, 10) and stimulation of nonspecific host resistance (6, 7, 8).

The aim of the present studies was to determine the influence of simultaneous application of chitosan and coccidiostats on the course of coccidiosis.

Material and methods

The study was realized on 40 six weeks old broiler chicken which were gotten from a farm highly infected with coccidia (a high oocysts output). The chickens were housed in an electrically heated poultry house with feed and water supplied ad libitum. The composition of the basal diet was following: total protein 18 %, fat 8%, crude fibres 4% -methionine-0,4%, cysteine-0,3%, tryptofan 18%, lizine-0,9%, calcium -1%, phosphorus -0,5%. The birds were divided in 4 groups (15 birds per group): I- control, II-treated with Baycox, III-treated with Chitosan and IV-treated with Baycox and Chitosan. Per group 10 chickens were randomly allocated for experiments. Baycox was applied in a dose of 25 ppm in drinking water for 2 days. Chitosan was given for 6 days in a dose of 0.6 g daily/bird.

The chickens were killed 6 days post treatment by cervical dislocation and intestinal mean total lesion scores (MTLS) were graded zero to four on an arbitrary scale described by Johnson and Reid (9), modified by Schmid (12). Before dead the oocysts index was established, too. The data generated by these studies were analyzed using the method Schmid (12).

Results and discussion

The effects of treatment with coccidiostats (Baycox) and Chitosan on the course of coccidiosis in broiler chicken are shown in the Table. The best results were obtained after Baycox and Chitosan application, no intestinal lesion scores and oocysts output in the group 4 were established. The mean total lesion scores (MTLS) was slightly lower in the Baycox group (1.05) as in the Chitosan group (1.45). No significant differences of coccidia output in groups II and III were observed. The oocysts index in these groups after treatment was determined as 1 (1-50 oocysts in 1 g of faeces). In the control group the intestinal lesion scores were very high (4.85) and the oocysts index was over 3 (over 300 oocysts in 1 g of faeces).

Baycox is a well-known coccidiostat especially useful for coccidiosis control in poultry. The mechanisms by which Chitosan protect chicken against coccidia infection is not known. However, it has been reported showed potent immunological activity such as macrophages and neutral granulocytes activation (5, 6, 7, 10, 13) and stimulation of nonspecific host resistance (3, 5, 11). Our results and the results of the authors quoted above showed that Chitosan reported is the most effective as an immune-adjuvant and can enhance antibody production. Our results also indicate that the reported enhancement of the immune response due to chitosan is may be of practical importance in improving of immunization programs in the poultry production.

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Table 1. Studies on intestinal Coccidiosis of broiler chickens

Group	MTLS in the chickens intestine *				Average MTLS from 10 chickens	Oocysts index
	1	2	3	4		
Control	1	0.8	0.9	1	3.7	3
Baycox	0.1	0	0	0.1	0.2	0.2
Chitosan	0.2	0.1	0	0.2	0.5	0.6
Baycox+Chitosan	0.1	0	0	0	0.1	0

Explanation: 1, 2, 3 and 4 – the same notation as in Fig. 1.

Mean Total Lesion Scores index (MTLS) – 0-4

Oocyst index - 0

1 = 1 – 50

2 = 51 – 300 oocysts

3 = > 300

- In each position of the table the average of the results from 10 chickens is presented

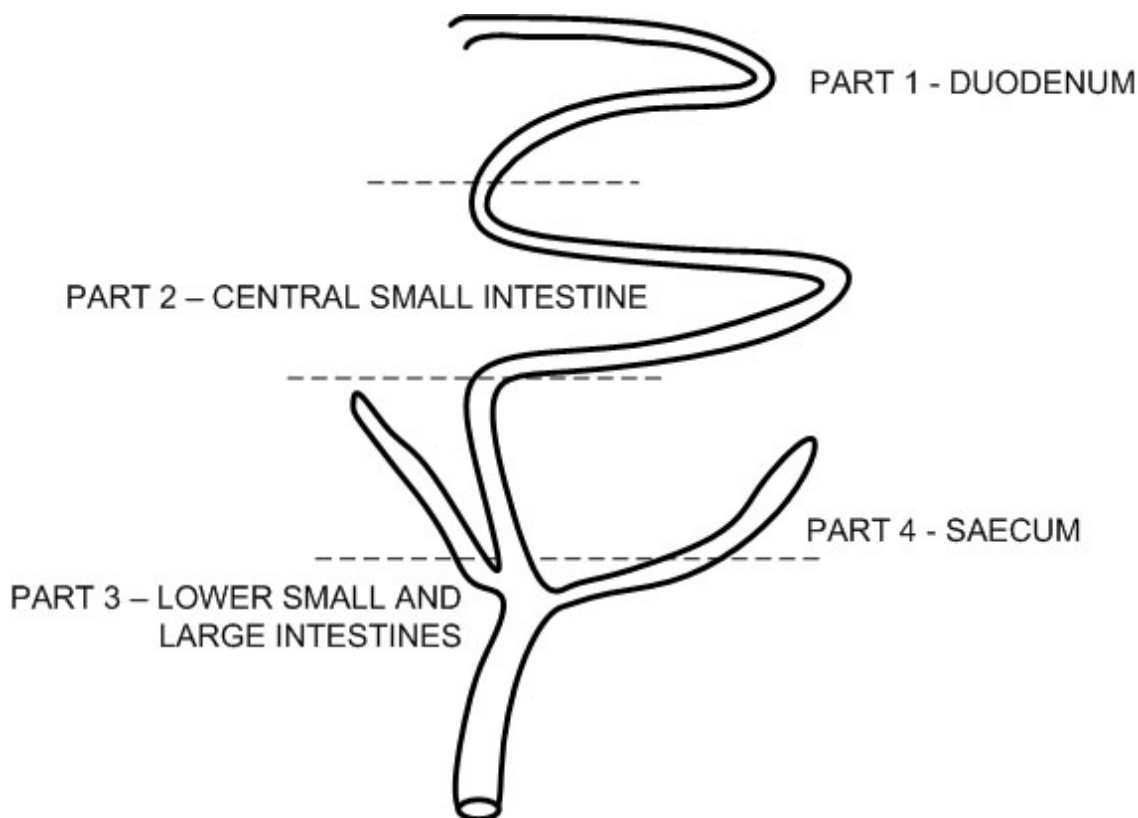


Fig. 1. Section of broiler chickens intestine for MTLs establishment.