



Nutritional methods in the prevention of coccidiosis in broiler chickens – the results of the studies conducted at the NRIAP in Kraków

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Introduction

A series of *in vivo* experiments was carried out to evaluate the effectiveness of nutritional methods in the prevention of coccidiosis in broiler chickens. Such studies were carried out in two directions: nutrition as an alternative method to in-feed coccidiostat or nutrition as a supportive factor in limiting the potential negative effect of the live anticoccidial vaccine (VAC) on the growth performance of broiler chickens.

Material & Methods

THE SEARCHING FOR THE NUTRITIONAL ALTERNATIVES TO IN-FEED COCCIDIOSTAT

The aim of the study was to determine the efficacy of selected herbal extracts and their blend, used singly or in conjunction with other natural feed additives (pre- and probiotics, organic acids, chitosan, mannan oligosaccharide), in the prevention of coccidiosis in broiler chickens.

- 3 experiments (exp.) on Ross 308 broilers: 2 challenge exp. with induced clinical coccidiosis + 1 farm test under natural exposure to coccidia
- Tested feed additives:
 - exp. 1- single extracts of garlic, sage, oregano, echinacea, thyme (these 5 were chosen to compose blend), rosemary, nettle, wormwood, yarrow, red pepper,
 - exp. 2- herbal extract blend (HEB) used singly or in combination with other feed additives (synbiotic, organic acids, chitosan, MOS),
 - exp. 3- HEB used singly or in combination with chitosan or MOS.

THE LIVE ANTICOCIDIAL VACCINES AND NUTRITION

The aim of the study was to evaluate the chosen nutritional factors as methods to mitigate the potential negative effect of live VAC on chickens growth performance.

- 3 exp. on Ross 308 chickens vaccinated with attenuated VAC
- Tested nutritional strategies:
 - exp. 1: normative or increased crude protein (CP) level, HEB,
 - exp. 2: supplementation with HEB and/ or probiotic,
 - exp. 3: HEB, *Allium sativum*, butiric acid, chitosan.

Results

- Based on the results of exp. 1, the most effective extract were: sage, garlic, oregano, thyme, and echinacea.
- HEB: significant reduction of the adverse effect of coccidial infection on the performance (comparable to the results obtained with the coccidiostat in-feed and better than in a group of birds receiving commercial herbal preparation)
- HEB + chitosan or MOS: no further improvement of performance indices.
- HEB + synbiotic or organic acids: significantly decreased performance.
- None of the nutritional methods affected the circulation of vaccine oocysts.
- VAC: can have adverse effect on growth performance in several days of post-vaccination period; resulted in higher ratio of heterophiles to lymphocytes (H / L); varying effect among experiments in compensatory growth in the grower-finisher feeding phase.
- The adverse effect of VAC on the performance parameters was reduced by some nutritional strategies, including: increased CP, or dietary supplementation with: HEB, probiotic, chitosan.
- The increased CP level and dietary supplementation with HEB significantly reduced the H/L ratio and reduced the stress following VAC.

Conclusions

- herbal extract blend (garlic, sage, thyme, oregano and echinacea) can provide effective protection against the coccidiosis in broiler chickens under conditions of low exposure to coccidia, and alleviate the detrimental effect of severe infection in term of clinical coccidiosis,
- some nutritional strategies (increased dietary crude protein level, supplementation with herbal extract blend, probiotic, or chitosan may allviate the negative effects of broiler chickens vaccination against coccidiosis.