



Nitarsonsone Does Not Interfere With the Acquisition of Immunity Following Coccivac®-T Vaccination

Nitarsonsone is commonly used by turkey growers to control blackhead (histomoniasis). A study was conducted by Dr. David Chapman, University of Arkansas, Center of Excellence for Poultry Science, to determine if nitarsonsone included in the ration for the first 5 weeks of growth interferes with acquisition of immunity to *Eimeria* after vaccination of day-old poult with Coccivac®-T.

Key Points

- Oocysts could be detected in the litter of Coccivac®-T vaccinates fed nitarsonsone, indicating that the vaccine *Eimeria* were cycling properly.
- Weights and intestinal oocyst counts post-challenge in vaccinates fed nitarsonsone were not significantly different from non-medicated vaccinates or unchallenged controls.
- Nitarsonsone does not interfere with the development of immunity to *Eimeria* infection as a result of vaccination with Coccivac-T.

Study Design

In the study, 120 day-old commercial tom poult were divided into three treatment groups. Two replicate pens of 20 birds each were assigned to each treatment.

Treatment 1: Poults were immunized orally with the label approved dose of Coccivac-T at one day of age and were then given nitarsonsone in feed up to 5 weeks of age.

Treatment 2: Poults were immunized orally with Coccivac-T at one day of age but received no medication in the feed.

Treatment 3: Poults were not immunized with Coccivac-T but were given diclazuril (1 ppm) in the feed until 5 weeks of age to provide a group of susceptible controls.

Beginning the second week, litter samples were collected weekly. Oocyst counts per gram of litter were made to verify that vaccine *Eimeria* were cycling in the vaccinated pens and that *Eimeria* cycling was prevented in the diclazuril (susceptible control) pens.

All feed medication was withdrawn at 35 days of age. Three days later, 16 healthy birds were selected from each pen, individually weighed and wing-banded. Eight birds from each pen were then challenged with a mixed *Eimeria* infection (100x dose of Coccivac-T). The remaining 8 birds from each pen remained unchallenged controls.

At 7 days post-challenge, birds were evaluated for weight gain post-challenge and for the presence of *Eimeria* oocysts in the duodenum, mid-intestine and ceca.

Table 1: Litter oocyst counts.

Treatment	Oocysts/gm of Litter (Thousands)				
	Week 2	Week 3	Week 4	Week 5	Week 6
Coccivac-T + Nitarstone	141.8	62.8	40.2	26.6	18.3
Coccivac-T + No Drug	163.5	47.0	26.8	30.5	22.1
Diclazuril	0	0	0	0	0

Results and Discussion

Litter oocyst counts verified that *Eimeria* were cycling in Coccivac-T vaccinates whether they were fed non-medicated feed or feed containing nitarstone. (See Table 1.)

Weight gains in both vaccinated groups were similar to unchallenged controls, while weight gain in susceptible controls was significantly depressed, demonstrating that the challenge dose was adequate. (See Table 2.)

Scrapings were taken from the three regions of the intestine (duodenum, mid-intestine, ceca) of each bird and the presence of oocysts in each region was scored on a scale of 0-4 depending upon the number of oocysts present in five fields of the microscope (x 10 magnification): 0 = none; 1 = 1-5; 2 = 5-10; 3 = 10-50; 4 = 50+. The results are summarized in Table 2.

Intestinal oocyst counts were significantly reduced compared to susceptible controls in both vaccinated groups. Cecal oocyst counts were higher in the vaccinates fed nitarstone than in the non-medicated vaccinates, but they were still significantly lower than the cecal oocyst counts of susceptible controls. These values indicate that both vaccinated groups had acquired significant immunity to mixed *Eimeria* challenge.

Litter oocyst counts confirmed that Coccivac-T continued to cycle properly in poult fed nitarstone during the first 5 weeks. Challenge of vaccinated birds demonstrated that protective immunity had been acquired despite 5 weeks of medication with nitarstone.

Nitarstone does not interfere with the development of immunity against *Eimeria* as a result of vaccination with Coccivac-T.

Table 2: Effects of challenge on Coccivac-T vaccinates fed nitarstone or non-medicated feed.

Treatment	Challenged	Mean Weight Gain \pm std dev ¹	Mean Oocyst Score		
			Duodenum	Mid-Intestine	Ceca
Coccivac-T + Nitarstone	Yes	582 \pm 63 ^a	0.44	0.38	1.69
Coccivac-T + No Drug	Yes	639 \pm 84 ^a	0.06	0.13	0.44
Susceptible Control	Yes	499 \pm 88 ^b	2.06	2.19	2.88
Unchallenged Control	No	602 \pm 58 ^a	NA	NA	NA

¹Values with different superscripts were significantly different (P>0.001).