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R.J. Grant

P.E. Waibel

T.W. Sullivan

C.L. Quarles

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# Effect of Graded Levels of Bambermycins on Turkey Growth Performance

R. J. GRANT

*Animal Health Research and Development,  
Hoechst-Roussel Pharmaceuticals, Inc., Somerville, New Jersey 08876*

P. E. WAIBEL

*Department of Animal Science,  
University of Minnesota, St. Paul, Minnesota 55108*

T. W. SULLIVAN

*Animal Science Department,  
University of Nebraska, Lincoln, Nebraska 68583*

and C. L. QUARLES

*Animal Sciences Department,  
Colorado State University, Fort Collins, Colorado 80521*

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**ABSTRACT** Three experiments were conducted in Minnesota, Nebraska, and Colorado to determine the effect on turkey performance of feeding graded levels of bambermycins (Flavomycin<sup>®1</sup>) from one day of age to market weight. The body weight and feed efficiency values are averages for 22-week-old males and 18-week-old females. Bambermycins produced significant ( $P < .001$ ;  $P < .05$ ) improvements in body weight or feed efficiency in all three experiments. Composite average body weights at 0, 1.1, 2.2, and 4.4 mg bambermycins/kg diet were 10.40, 10.54, 10.59, and 10.64 kg, respectively. Overall, average feed efficiencies from bambermycins at 0, 1.1, 2.2, and 4.4 mg/kg of diet were 2.76, 2.73, 2.72, and 2.71, respectively.

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## INTRODUCTION

Three regional turkey growth experiments were conducted to evaluate bambermycins, an antibiotic intended solely for use in animal nutrition. Previous investigations with broilers and turkeys have demonstrated increased growth rates and feed efficiencies when bambermycins was added to the diet (Bauer and Dost, 1965; Waldroup *et al.*, 1970; Dilworth and Day, 1970; Quarles and Kling, 1973; Sullivan and Kubicek, 1973; and Moeller *et al.*, 1976). Bambermycins does not yet have FDA approval for turkeys. Current approvals allow bambermycins to be added to the rations of broilers and swine.

The objective of these experiments was to determine the effect of dietary bambermycins on weight gain and feed efficiency of turkeys from one day of age to market weight.

## MATERIALS AND METHODS

Three experiments were conducted during 1977 in Minnesota (Experiment 1), Nebraska (Experiment 2), and Colorado (Experiment 3) utilizing Large White, Large White, and Broad White day-old poults, respectively. Each treatment level was replicated 5 to 9 times depending upon location. A total of 2900 sexed (50/50) turkeys was utilized for the three experiments. Standard management practices currently in use at the three locations were used throughout the studies. The housing in Experiments 1 and 3 was floor pens with wood shavings litter in a controlled environment house. In Experiment 2, the turkeys were raised to 4 weeks of age in batteries and then transferred to floor pens with wood shavings litter.

Bambermycins was added to corn-soybean basal turkey rations commonly used at the various locations. All the rations met the NRC (1977) nutrient requirements. The diets were fed as meal in Experiments 1 and 2, and as pellets in Experiment 3. Four treatments consisting of 0, 1.1, 2.2, and 4.4 mg bamber-

<sup>1</sup>® Registered TM - Hoechst AG; also referred to as Moenomycin.

TABLE 1. Average body weight, feed efficiency, and percent response over control turkeys (Experiment 1)<sup>a</sup>

Bambermycins (mg/kg)	Weight		Feed efficiency <sup>b</sup>	
	(kg)	(% response)	(Feed/wt)	(% response)
.0	10.55 <sup>c</sup>	...	2.77 <sup>c</sup>	...
1.1	10.61	.6	2.74	1.1
2.2	10.46	-.9	2.75	.7
4.4	10.75	1.9	2.70	2.5

<sup>a</sup>Twelve pens (6 pens of males and 6 pens of females) per treatment; with 11 and 14 males and females per pen, respectively.

<sup>b</sup>Significant linear response to bambermycins ( $P < .05$ ).

<sup>c</sup>Pooled standard errors are .080 for body weight and .019 for feed efficiency.

mycins/kg diet were fed from one day of age to market weight. The males and females were fed to 22 and 18 weeks of age, respectively. Market weights, replicate average weights, and feed efficiencies are reported.

Statistical evaluations included analysis of variance and regression components of the treatment effect. Replicate weighed averages were used to determine overall body weight and feed efficiency responses.

#### RESULTS AND DISCUSSION

The results of Experiments 1, 2, and 3 are presented in Tables 1, 2, and 3, respectively. Weighted averages of composite body weight and feed efficiency are given in Table 4.

Each body weight value is an average of the mean body weight of females at 18 weeks and males at 22 weeks within each experiment

or the entire study. Likewise, each feed efficiency value is the average of the mean feed/gain ratio for females to 18 weeks and males to 22 weeks.

Adding bambermycins to the ration produced a highly significant ( $P < .001$ ) linear improvement in body weights in Experiment 3. A significant ( $P < .05$ ) quadratic improvement in body weights was noted in Experiment 2 and a numerically positive response in body weights in Experiment 1. With the exception of Experiment 2, the highest level of bambermycins gave the maximum body weight response. In Experiment 2, the highest body weight response was obtained at the 2.2 mg/kg treatment. Composite average body weights for the treatments 0, 1.1, 2.2, and 4.4 mg/kg were 10.40, 10.54, 10.59, and 10.64 kg, respectively (Table 4).

Feed efficiency responses from the addition

TABLE 2. Average body weight, feed efficiency, and percent response over control turkeys (Experiment 2)<sup>a</sup>

Bambermycins (mg/kg)	Weight <sup>b</sup>		Feed efficiency	
	(kg)	(% response)	(Feed/wt)	(% response)
.0	9.51 <sup>c</sup>	...	3.12 <sup>c</sup>	...
1.1	9.55	.4	3.07	1.6
2.2	9.81	3.2	3.04	2.6
4.4	9.64	1.4	3.08	1.3

<sup>a</sup>Ten pens (5 pens of males and 5 pens of females) per treatment; with 20 and 25 males and females per pen, respectively.

<sup>b</sup>Significant quadratic response to bambermycins ( $P < .05$ ).

<sup>c</sup>Pooled standard errors are .062 for body weight and .025 for feed efficiency.

TABLE 3. Average body weight, feed efficiency, and percent response over control turkeys (Experiment 3)<sup>a</sup>

Bambermycins (mg/kg)	Weight <sup>b</sup>		Feed efficiency <sup>c</sup>	
	(kg)	(% response)	(Feed/wt)	(% response)
.0	10.79 <sup>d</sup>	...	2.57 <sup>d</sup>	...
1.1	11.04	2.3	2.52	1.9
2.2	11.11	3.0	2.51	2.3
4.4	11.12	3.1	2.51	2.3

<sup>a</sup>Eighteen pens (9 pens of males and 9 pens of females) per treatment; with 20 birds per pen.

<sup>b</sup>Significant linear and quadratic response to bambermycins ( $P < .001$ ).

<sup>c</sup>Significant linear response to bambermycins ( $P < .01$ ).

<sup>d</sup>Pooled standard errors are .046 for body weight and .012 for feed efficiency.

of bambermycins were significantly linear ( $P < .05$ ;  $P < .01$ ) in Experiments 1 and 3. In Experiment 2, the feed efficiency response was positive and approached quadratic significance. Throughout these experiments, the highest feed efficiency response was obtained at the 2.2 or 4.4 mg/kg level. Composite average feed efficiencies for treatments 0, 1.1, 2.2, and 4.4 mg/kg were 2.76, 2.73, 2.72, and 2.71, respectively (Table 4).

The results of these studies are in agreement with earlier studies conducted by Moeller *et al.* (1976) in which the turkeys were marketed at twelve weeks of age. The current studies show that the turkeys continue to respond to bambermycins when fed to market weight. These experiments demonstrate that bambermycins increased body weights and improved feed efficiencies of turkeys grown to market weight under various environmental and management conditions.

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TABLE 4. Composite body weight and feed efficiency responses of turkeys fed graded levels of bambermycins (replicate weighted average)

Bambermycins (mg/kg)	Weight <sup>a</sup>		Feed efficiency <sup>a</sup>	
	(kg)	(% response)	(Feed/wt)	(% response)
.0	10.40 <sup>b</sup>	...	2.76 <sup>b</sup>	...
1.1	10.54	1.3	2.73	1.1
2.2	10.59	1.8	2.72	1.4
4.4	10.64	2.3	2.71	1.8

<sup>a</sup>Significant linear response to bambermycins ( $P < .001$ ).

<sup>b</sup>Pooled standard errors are .035 for body weight and .010 for feed efficiency.