

EFFICACY OF NARASIN, ROXARSONE AND BACITRACIN COMBINATIONS IN THE DIET OF BROILER CHICKENS

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Story of Brief

An experiment was conducted to evaluate the performance of broilers fed different combinations of narasin, roxarsone and bacitracin. Birds receiving bacitracin and roxarsone in addition to narasin tended to have greater 46-day weight than those receiving only narasin. Mortality was not affected by the drug treatments. The use of bacitracin and roxarsone in combination with narasin does not adversely affect body weight or feed utilization when feed to broiler chickens.

(Key words: Narasin, Bacitracin, Roxarsone, Broiler Gain)

Introduction

Performance data that are obtained under laboratory conditions are not always indicative of the efficacy of drugs when administered under field conditions. Floor pen trials are important in the evaluation of drugs and help to bridge the gap between laboratory trials and expensive large scale field trials.

Narasin is a polyether antibiotic which is an effective coccidiostat (Ruff et al., 1979) that is widely used in poultry production. Roxarsone, an organic arsenical compound, is frequently used in broiler diets. It is approved for use to promote growth and improve feed utilization and pigmentation. Bacitracin-zinc have been shown to be beneficial in studies with a variety of antibiotics and challenging organisms (Abbot and Couch, 1970).

Combinations of feed additives for use in animal diets must be approved by the Food and Drug Administration. For such approval to be obtained, it must be demonstrated that a combination of the additives provide some benefits and produce no deleterious effects. Therefore, this study was conducted to evaluate the performance of broilers fed different combinations of narasin, roxarsone and bacitracin.

Materials and Methods

Chicks of a commercial broiler strain were obtained from a hatchery and randomly allocated to pens. Sixty birds (30 males and 30 females) were assigned to each of 24 pens. Each pen measured 7 ft. x 12 ft., thereby allowing 1.4 ft² per bird. The pen floor was covered with approximately 6 inches of rice hulls over old litter.

Supplemental heating was provided by infra-red lamps for the first 14 days of the experiment, while lighting was provided continuously for the duration of the experiment. Plastic feeder trays were used during the first 7 days and then gradually replaced by hanging tube-type feeders.

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Water was provided by automatic drinkers. At one day of age chicks were vaccinated against Marek's disease by subcutaneous injection and orally against bronchitis and Newcastle disease.

Diets (Table 1) were formulated to meet or exceed the National Research Council's specified requirements for essential nutrients for broiler chickens. The starter diet was fed from 1-21 days, the finisher diet from 21-41 days and the withdrawal diet from 41-46 days. The experimental drugs were included in the diets as indicated in the experimental design (Table 2). Narasin and roxarsone were added to the

Table 1. Experimental diets.

Ingredient	Starter (%)	Finisher (%)	Withdrawal (%)
Ground Corn	54.80	57.95	57.95
Soybean Meal	38.00	35.00	35.00
Alfalfa Meal	3.00	3.00	3.00
Dicalcium Phosphate	2.35	2.35	2.35
Calcium Carbonate	.90	.90	.90
Salt	.40	.40	.40
Vitamin Mix	.30	.30	.30
Trace Mineral Mix	.10	.10	.10
DL-Methionine	.15	0	0
	100.	100.	100.

Calculated Analysis

ME (Kcal/kg)	2729.68	2762.58	2762.57
Protein (%)	22.13	21.01	21.01
Fat (%)	2.44	2.54	2.54
Fiber (%)	4.70	4.55	4.55
Calcium (%)	1.06	1.05	1.05
Phos. Available (%)	.60	.60	.60
Sodium (%)	.18	.18	.18
Potassium (%)	.99	.95	.95
Lysine (%)	1.27	1.19	1.19
Methionine (%)	.50	.40	.40
Met. + Cystine (%)	.78	.69	.69

Table 2. Experimental Treatments.

Treatment No.	Narasin (ppm)	Bacitracin (g/ton)	Roxarsone (g/ton)
1	80	0	0
2	80	0	15
3	80	45	0
4	80	45	15

starter and grower diets, but were not included in the withdrawal ration for the last three days before final weights were taken and the last nine days before slaughter. Bacitracin was included in the diet until final weights were obtained.

Four treatments consisting of six replicates per treatment in a randomized block design were evaluated in this study. Mortality was recorded daily along with observations for toxicity and general flock conditions. Feed consumption was calculated at the end of the experiment. Final body weights were determined by sex and feed efficiency calculated at 46 days of age.

Results and Discussion

No statistically significant treatment effects were observed (Table 3). There was evidently a trend for increased weight with the addition of either bacitracin or roxarsone. When all three drugs were present, the 46 day weight was increased by 3.4%. Feed efficiency values were similar for all treatments, but there was a trend for better utilization of feed in birds fed a combination of bacitracin and roxarsone when compared to those receiving narasin only.

Mortality figures (Table 3) in this study were within the normal range usually experienced. There was no indication of any adverse effects of the various dietary treatments.

Examination of the body weights of males and females independently (Table 4) showed that males gained 13 to 18% more weight than the

Table 3. Effects of different combination of narasin, roxarsone and bacitracin on 46-day body weight, feed efficiency and mortality of broiler chickens.

Treatment No.	Body Weight (g)	Feed Efficiency	Mortality (%)
1	1571	2.27	1.05
2	1603	2.23	3.68
3	1592	2.03	4.38
4	1624	2.19	3.18

Table 4. Body weight of male and female birds at 46 days.

Treatment No.	Body Weight (g)	
	Males	Females
1	1684	1487
2	1744	1414
3	1728	1474
4	1762	1488

females. Within sex treatment effects, however, were not significant, although there was a trend for males receiving either bacitracin or roxarsone to weigh more than those being treated with narasin alone.

Use of bacitracin and roxarsone in combination with narasin had no adverse effect on body weight gain or feed utilization when fed to broilers.

Literature Cited

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