

EFFICACY OF BIO-COX, 3-NITRO-10 AND BACIFERM-50 COMBINATIONS FED TO BROILER CHICKENS IN A FLOOR PEN STUDY

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Story in Brief

A combination of an ionophore (bio-cox), a coccidiostat (3-nitro-10) and an antibiotic (baciferm-50) was administered in the feed to 4800 commercial broiler chicks during a 46 day floor pen trial. Day old chicks were placed in two forty-pen houses which had previously been occupied by other chickens. Body weight gain and feed efficiency was improved when the drugs were fed in combination. Males gained 19% more than females and showed a greater response to the higher drug combinations. Mortality was not affected by drug treatment.

[Key Words: Ionophore, Coccidiostat, Antibiotics, Gain, Mortality.]

Introduction

Antibiotics are widely used in the broiler industry to reduce the incidence of common debilitating diseases and to improve growth rate and feed efficiency. The growth-promoting effects of antibiotics in poultry is concerned with decreasing the magnitude of the "environmental disease level", by inhibiting the growth of nutrient-destroying organisms and those that produce excessive amounts of toxic nitrogenous wastes, while concomitantly improving the availability or absorption of certain nutrients.

Ionophores are commonly used as coccidiostats in poultry rations and like antibiotics, have been credited with increases in growth and feed efficiency. Low level continuous feeding of antibiotics or ionophores have been used to effectively control the low disease levels found in good poultry operations. A combination of an ionophore and antibiotic, with the required FDA clearance, could possibly improve performance over that observed with administration of either drug independently. Three drugs Bio-cox, 3-nitro-10 and baciferm-50 have been successfully used in improving the performance of broiler chicks when administered singly, but to date, no documented combinations of these three have been used.

This study was conducted to evaluate the efficacy of the combination of bio-cox, 3-nitro-10 and baciferm-50 in broiler chickens raised on deep litter.

Materials and Methods

Forty-eight hundred commercial day-old broiler chicks were randomly allotted to eight pens in two houses (30 males and 30 females per pen). To ensure the proper environmental disease level, this trial followed a previous feeding study with no clean-up between groups. A starter mash was fed for the first 28 days of age and a finishing ration was fed from

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28 to 46 days (Table 1). Treatment designations are shown in Table 2. Each dead bird was weighed and recorded and the weight used to adjust for feed efficiency. Data collection and measurement included body weight gain, feed consumption for 46 days, mortality and adjusted feed efficiency.

Table 1. Starter and finisher rations^a.

Ingredient	Starter %	Finisher %
Ground Corn	52.8	69.76
Soybean Meal	39.0	25.0
Fat	4.0	2.0
Dicalcium Phosphate	2.35	1.75
Calcium Phosphate	.9	.6
Vitamin Mix	.4	.4
Salt	.3	.3
d1-Methionine	.15	.09
Trace Mineral	.1	.1
	100	100

^a.4% ground polyethylene was added to the basal ration with all drug mixtures substituted for polyethylene.

Table 2. Experimental treatments.

Treatment	Bio-Cox ^a (g/ton)	3-Nitro-10 ^b (g/ton)	Bacifer-50 ^c (g/ton)
1	60	0	0
2	60	22.7	0
3	60	34.1	0
4	60	45.4	0
5	60	0	50
6	60	22.7	50
7	60	34.1	50
8	60	45.4	50

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Results and Discussion

Body weight gain, feed efficiency and percent mortality at forty-six days of age is presented in Table 3. Birds administered Bio-cox (Treatment 1) alone gained significantly less weight than those

Table 3. Body weight gain, feed efficiency and percent mortality of 46-day old birds.

Treatment No.	Body Weight Gain(g)	Feed Gain	Mortality(%)
1	1513 ^g	2.02	1.84
2	1536 ^f	1.95	2.08
3	1617 ^c	1.83	2.76
4	1595 ^d	1.86	1.76
5	1582 ^e	1.87	1.20
6	1584 ^{de}	1.86	1.59
7	1705 ^a	1.73	2.43
8	1634 ^b	1.75	2.21

abcdefg, Means in column having different superscripts differ (P<.05).

given biocox in combination with 3-nitro-10 or bacifer-50. The combination of biocox, bacifer-50 and 3-nitro-10 at the 34.1 g/ton level (Treatment 7) produced significantly greater gains than all other treatment. Feed efficiency paralleled body weight gain with the tendency being for birds given the combination of all three additives at the higher levels of 3-nitro-10 to be more efficient. Percent mortality was unaffected by drug treatment.

Examining the body weight gains of males and females independently (Table 4) revealed that males gained 19% more weight than females. The gain response to the feed additives was more pronounced in the females where the combination of biocox, bacifer-50 and 3-nitro-10 at the two highest levels (Treatments 7 and 8) was greater (P<.05) than any other combination.

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

Treatment No.	Body Weight Gain(g)	
	Males	Females
1	1644 ^g	1382 ^e
2	1651 ^g	1420 ^d
3	1770 ^c	1463 ^c
4	1730 ^d	1459 ^{bc}
5	1693 ^f	1470 ^c
6	1718 ^e	1463 ^c
7	1895 ^a	1513 ^a
8	1786 ^b	1482 ^b

abcdefg, Means in columns having different superscripts differ (P<.05).

These results indicate that with the required FDA clearance, the drug combination of biocox, 3-nitro-10 and bacifer-50 has potential for improving gain and feed efficiency of broiler chickens reared on deep litter.

Treatment No.	Body Weight (g)	Feed Conversion Ratio
1	1813 ^a	1.88
2	1730 ^b	1.95
3	1817 ^a	1.76
4	1728 ^b	1.70
5	1728 ^b	1.80
6	1728 ^b	1.80
7	1702 ^b	1.80
8	1834 ^a	1.73

Means in columns having different superscripts differ ($P < .05$).

given places in combination with 3-nitro-10 or bacifer-50. The control group of biocox, bacifer-50 and 3-nitro-10 at the 2% level (treatment 1) produced significantly greater gains than all other treatments. Feed efficiency correlated body weight gain with the tendency being for birds given the combination of all three additives at the higher levels of 3-nitro-10 to be more efficient. Percent mortality was unaffected by drug treatment.

Examining the body weight gains of males and females independently (Table 2) revealed that males gained less weight than females. The gain response to the feed additives was more pronounced in the females where the combination of biocox, bacifer-50 and 3-nitro-10 at the two highest levels (treatments 7 and 8) was greater ($P < .05$). On any other combination.

Table 2. Body weight gain of male and female birds at 45 days of age.

Treatment No.	Male	Female
1	1663 ^a	1782 ^a
2	1681 ^a	1820 ^a
3	1717 ^a	1821 ^a
4	1730 ^a	1822 ^a
5	1692 ^a	1820 ^a
6	1718 ^a	1821 ^a
7	1827 ^a	1813 ^a
8	1788 ^a	1882 ^a

Means in columns having different superscripts differ ($P < .05$).