Ionophores for Growing Broiler Chicks

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Story in Brief

To determine the possible influence of ionophores on maintenance energy requirements of animals, broiler chicks were fed monensin, lasalocid and salinomycin in two experiments. In trial 1, chicks (3 weeks of age) were fed diets containing .3 or 2 percent NaCl with monensin, lasalocid and salinomycin added at 0 or 30 g per ton of feed for 8 days. In trial 2, chicks (8 days of age) were fed ionophores at 0 or 30 g per ton or monensin at levels of 15, 60 and 120 g per ton. No differences were observed in either trial for weight gain or efficiency of feed use with ionophore additions to the feed.

Introduction

Ionophores are commonly used as coccidiostats in rations for poultry. Monensin and lasalocid are approved at levels of 90-110 g/ton and 68-113 g/ton (Anonymous, 1979) of the diet, respectively, to prevent coccidiosis in poultry. For cattle, monensin, lasalocid and salinomycin are fed at 5 to 30 g per ton to increase energetic efficiency through reduced loss of methane and increased energy digestibility as reviewed by Owens (1980). Monensin increased the energetic efficiency of maintenance by 5.7 percent without increasing the efficiency of energy use for growth according to Byers (1980). He suggested that monensin may reduce the energy requirements for maintenance. Monensin will alter sodium flux in tissues and pumping sodium is one of the major energy costs of muscular tissue. However, feeding monensin at 110 g/ton or 150 g/ton tended to reduce efficiency of energy use in growing chicks (Parsons and Baker, 1982). These experiments were designed to test the effect of three ionophores, monensin, lasalocid and salinomycin at 30 g/ton on rate and efficiency of growth of chicks at an age before coccidiosis should be encountered.

Materials and Methods

In experiment 1, 192 commercial broiler chicks were subdivided into 24 pens of 8 chicks each at 3 weeks of age. Chicks were fed a diet (Table 1) without ionophores or with 30 g per ton of feed as monensin, lasalocid or salinomycin plus NaCl at either .3 or 2.0 percent of the diet. Chicks were weighed following 12 hr without feed and water initially (21 days of age) and after 8 days on test diets.

In experiment 2, 192 chicks of the same breeding, but 8 days of age were subdivided into 24 pens of 8 chicks each. Chicks were fed the same diet without ionophores or with 30 g per ton from monensin, lasalocid, or salinomycin. In

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Table 1. Diet composition[a]

Ingredient	%
Corn	47.69
SBM (44%)	34.20
Corn oil	5.00
Meat and bone meal	4.75
Alfalfa meal (17%)	2.85
Live yeast culture (14%)	2.85
dl methionine	.095
Calcium carbonate	.855
Phosphorus supplement (Ca 20-P 18)	.950
Trace mineral	.095
Salt	.285
Vitamin mix (turkey breeder)	.380

[a]Ionophores or salt (1.7%) added to form test diets.

addition, monensin was fed at levels of 15, 60 and 120 g per ton of feed. Chicks were weighed following a 5-hour shrink initially (8 days of age) and after 7 days on test diets. Feed and water were available and libitum during both trials and feed intake was monitored.

Results and Discussion

Daily gain and gain to feed ratios were not significantly altered by ionophore addition in the first experiment (Table 2) though daily dry matter intake was slightly increased by ionophore addition.

Added NaCl had no significant effect on feed intake, rate of gain, or gain to feed ratio (Table 3) and did not interact with ionophores. In experiment 2, daily gain, daily intake and gain to feed were not changed by added ionophores or by various levels of monensin.

Results indicate that these ionophores do not decrease energy requirements for growth and maintenance of growing chicks. This suggests that ionophores did not reduce the energy requirement for maintenance. Since sodium and potassium metabolism of chicks differs from that of mammals (Robbins, 1982), extrapolation of results to mammals may be misleading. Nevertheless, results do not support the theory that ionophores decrease the energy requirement for maintenance.

Table 2. Ionophore effect on gain, trial 1

		Ionophore		
Item	0	Mon	Las	Sal
Initial weight, g	288	296	301	301
Daily gain, g	24.0	24.8	24.1	24.5
Daily DM intake, g	55.0	57.9	58.0	57.5
Gain/feed	.42	.43	.41	.43

Table 3. Increased salt effect on gain, trial 1

Item	NaCl level	
	.3	1.7
Initial weight, g	297	295
Daily gain, g	24.6	24.1
Daily DM intake, g	57.2	57.0
Gain/feed	.43	.42

Table 4. Ionophore effect upon gain, trial 2

Item	Ionophore (30 g/ton)			
	0	Mon	Las	Sal
Initial weight, g	120	123	121	120
Daily gain, g	25.1	24.2	24.8	24.5
Daily DM intake, g	35.3	35.8	36.0	35.3
Gain/feed	.70	.67	.68	.68

Table 5. Increased monensin effect on gain, trial 2

Item	Monensin level				
	0	15	30	60	120
Initial weight, g	120	123	123	123	123
Daily gain, g	25.1	24.8	24.2	25.2	24.2
Daily DM intake, g	35.3	35.5	35.8	35.5	34.3
Gain/feed	.70	.69	.67	.70	.69

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