

วารสารเกษตร 6,4: 295-301 (2533)

Journal of Agriculture 6,4 : 295-301 (1990)

## EFFICACY OF FEED ADDITIVES IN PRODUCTION PERFORMANCES AND CONTROL OF INFECTIOUS PNEUMONIA IN SWINE.

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**ABSTRACT:** Thirty Large White x Landrace barrows and 30 similarly bred gilts were used in a randomized complete block design to determine the efficacy of different levels of lincomycin plus sulphamethazine (LS) in preventing infectious pneumonia.

Six barrows and 6 gilts were assigned at random to one treatment with three replications. These hogs were fed *ad libitum* with a 16% protein growing ration medicated with LS 44/110, 44/110, 44/110, 22/55 ppm and Tylan Sulpha (TS) 110/110 ppm as treatments I, II, III, IV and V, respectively. Medication continued for 60kg liveweight and then the hogs were fed *ad libitum* with a 14% protein finishing ration medicated with LS 44/110, 22/55, 0/0, 22/55 ppm and TS 55/55 ppm for treatments I to V for another period up to 94 feeding days.

After 94 feeding days all hogs were fed unmedicated finishing ration for another 15 days to reduce hazards of antibiotics to consumers. Then 12 hogs (6 barrows and 6 gilts) from treatment I and six hogs (3 barrows and 3 gilts) from treatments II to V were slaughtered to determine the extent of lung lesions.

No significant differences ( $P>0.05$ ) were found in all production traits among the treatments. The percentage of the incidences of hogs affected with apparent infectious pneumonia and the area of lung affected of treatments I to V were 16.6/40.0, 33.3/35.0, 50.0/55.0, 33.3/40.0 and 50.0/40.0 percent, respectively.

Mortality, morbidity and skeletal defects were not found in any experimental hogs.

## INTRODUCTION

The results from the research as regards the efficacy of the combination of lincomycin and sulphamethazine in production performances and control of infectious pneumonia in swine reported by Boonlue and Suraluck (1983) showed that the combination of such feed additives had a trend to improve the swine production performance and to prevent infectious pneumonia though the differences were not significant.

To elaborate this experiment, a further study on the efficacy of those feed additives was conducted and extended into different levels. The examination of

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lung lesions still followed the recommendation of Dunne (1970) and Bruner and Gillespie (1973).

The experiment was conducted at the Department of Animal Husbandry, Faculty of Agriculture, ChiangMai University and animals were slaughtered at Livestock Breeding Station, ChiangMai provinces from April to September 1983. The present study was undertaken to determine the levels of lincomycin plus sulphamethag (LS) in preventing infectious pneumonia.

## MATERIALS AND METHODS

Thirty barrows and thirty gilts (Large White x Landrace) were used in this experiment. Six barrows and six gilts were assigned at random to one treatment with three replications each of 2 barrows and 2 gilts within each treatment. The hogs were fed *ad libitum* with 16% protein growing ration medicated with lincomycin plus sulphamethazine at 44/110, 44/110, 44/110, 22/55 ppm and Tylan Sulpha 110/110 ppm as treatments I, II, III, IV and V, respectively.

Medicated growing ration continued until 60kg liveweight and after that the hogs were fed *ad libitum* with a 14% protein finishing ration medicated with lincomycin plus sulphamethazine at 44/110, 22/55, 0/0, 22/55 ppm and Tylan Sulpha 55/55 ppm for treatment I to V for another period up to 94 feeding days. The rations used are presented in Table 1.

Weighing of the animals was done every two weeks and more often as the animals approached 60kg liveweight for the first period and every two weeks from 60kg liveweight up to 94 feeding days. Water was provided by automatic waterers. Complete records of weights, feed consumption and lesions of infectious pneumonia were kept.

After 94 days of feeding an unmedicated finishing ration was given for another 15 days to reduce hazards of antibiotics to consumers then 12 hogs (6 barrows and 6 gilts) from treatment I and 6 hogs (3 barrows and 3 gilts) from treatments II to V were randomly slaughtered at the Meat Division, ChiangMai Livestock Breeding Station, ChiangMai Province to determine the skeletal defects and infectious pneumonia lesions.

## RESULTS AND DISCUSSION

The average of the various production traits are shown in Table 2. The average initial weight of animals was 21.68 kg. Number of feeding days for 60 kg liveweight of treatments I, II, III, IV and V were 60, 55, 53, 57 and 54 days, respectively. The average daily gains were 651, 693, 728, 681 and 716 g, feed conversion ratios were 2.64, 2.52, 2.66, 2.60 and 2.54 and average daily feed intakes were 1.73, 1.74, 1.95, 1.78 and 1.80kg, respectively.



Table 1. Calculated nutrient composition of the experimental rations.

Ingredients (kg)	First period Treatments					Second period Treatments				
	I	II	III	IV	V	I	II	III	IV	V
Rice bran	20.00	20.00	20.00	20.00	20.00	25.0	25.00	25.00	25.00	25.00
Broken rice	30.00	30.00	30.00	30.00	29.50	29.5	29.50	29.50	29.50	29.50
Ground yellow corn	29.00	29.00	29.00	29.00	29.00	30.0	30.00	30.00	30.00	30.00
Soybean oil meal	12.00	12.00	12.00	12.00	12.00	8.0	8.00	8.00	8.00	8.00
Fish meal	7.00	7.00	7.00	7.00	7.00	5.0	5.00	5.00	5.00	5.00
Dicalcium phosphate	1.20	1.20	1.20	1.20	1.20	1.8	1.80	1.80	1.80	1.80
Danmix	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Tylan sulphur	-	-	-	-	0.50	-	-	-	-	0.25
Lincomycin +	0.10	0.10	0.10	0.5	-	0.10	0.05	-	0.05	-
Sulphamethazine	0.45	0.45	0.45	0.50	0.55	0.35	0.40	0.40	0.40	0.20
Salt										
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<b>Calculated chemical analysis</b>										
Metabolizable energy	3138.00	3138.00	3138.00	3138.00	3138.00	3139.00	3139.00	3139.00	3139.00	3139.00
Kcal/kg										
Crude protein, %	16.17	16.17	16.17	16.17	16.17	14.50	14.50	14.50	14.50	14.50
Crude fibre, %	4.36	4.36	4.36	4.36	4.36	4.75	4.75	4.75	4.75	4.75
Calcium, %	0.74	0.74	0.74	0.74	0.74	0.76	0.76	0.76	0.76	0.76
Phosphorus, %	0.68	0.68	0.68	0.68	0.68	0.75	0.75	0.75	0.75	0.75

Table 2. Summary of production data.

Traits	At 60kg liveweight					At 94 feeding days				
	Treatments					Treatments				
	I	II	III	IV	V	I	II	III	IV	V
Number of animals	12	12	12	12	12	12	12	12	12	12
Initial weight (kg)	21.36	22.16	21.73	21.50	21.63	60.40	60.30	60.30	60.30	60.31
Days of feeding	60	55	53	57	54	-	-	-	-	-
Final weight (kg)	60.40	60.30	60.30	60.30	60.31	83.94	86.17	86.21	83.38	86.50
Weight gain (kg)	39.04	38.14	38.57	38.80	38.68	62.58	64.01	64.48	61.88	64.87
Average daily gain (g)	651	693	728	681	716	666	681	686	658	691
Feed conversion ratio	2.64	2.52	2.66	2.60	2.54	2.97	2.86	3.14	2.98	2.86
Feed consumption (kg)	103.80	95.70	103.40	101.50	97.20	186.0	182.80	202.8	184.20	185.30
Average daily intake (kg)	1.73	1.74	1.95	1.78	1.80	1.98	1.95	2.16	1.96	1.97

Table 3. Summary of infectious pneumonia data.

Traits	Treatments				
	I	II	III	IV	V
Number of animals	12	6	6	6	6
Number of animals affected with primary (mycoplasma) pneumonia	2	2	3	2	3
Average pneumonic area (%)	(16.6%)	(33.3%)	(50.0%)	(33.3%)	(50.0%)
Number of animals affected with secondary bacterial pneumonia	40.00	35.0	55.0	40.0	40.0
Number of normal animals	-	-	-	-	-
Weight at 94 feeding days (kg)	10 (83.4%)	4 (66.7%)	3 (50.0%)	4 (66.7%)	3 (50.0%)
	83.94	86.17	86.21	83.38	86.50

No significant differences were found in any of the production traits at 60 kg liveweight.

Similar results were observed in the second period from starting up to 94 feeding days. The average final weights of treatments I to V were 83.94, 86.17, 86.21, 83.38 and 86.50 kg, lower than the first experiment (Boonlue and Suraluck, 1983). This lower weight might result from changing management practice from individual feeding to group feeding and decreasing percent protein in the rations for both periods.

The average daily gains of treatments I, II, III, IV and V during the second stage were 666, 681, 686, 658 and 691 g, feed conversion ratios were 2.97, 2.86, 3.14, 2.98 and 2.86 and average daily feed intakes were 1.98, 1.95, 2.16, 1.96 and 1.97 kg respectively. Feed conversion ratios and daily feed consumption tended to increase compared with the period up to 60 kg liveweight. These results were similar to Aukshmukst (1972), Sreckovic *et al* (1972), Hovorka and Pavlik (1974) and Makovetskias and Petaris (1975) who reported that animals raised to lighter weights are more efficient than heavier animals.

For the lung examination, 36 hogs from treatments I to V were randomly selected and slaughtered. All were healthy and had never been ill before. Number and percentage of hogs affected with primary pneumonia of five different treatments were 2 (16.6%), 2 (33.3%), 3 (50.0%), 2 (33.3%) and 3 (50.0%) with average pneumonic areas of 40.0, 35.0, 55.0, 40.0 and 40.0 percent, respectively. Animals affected with secondary bacterial pneumonia were not found in this experiment. These data are presented in Table 3.

No significant differences in the prevention of primary respiratory diseases were found among the treatments.

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