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The Effects of Hygromycin Alone and in Combination with Chlortetracycline on Growing-Finishing Swine

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THE EFFECTS OF HYGROMYCIN ALONE AND IN COMBINATION WITH CHLORTETRACYCLINE ON GROWING-FINISHING SWINE [1]

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Hygromycin is a "relatively new" antibiotic that is recommended for its ability to control certain internal parasites in swine. Previous work has shown that it is very effective against roundworms, nodular worms and whip worms. In some of these trials hygromycin has increased gains comparable to other antibiotics. However, these studies did not show whether the increased gains from feeding hygromycin were due to the control of roundworms or due to a growth stimulating effect similar to that exhibited by other antibiotics. In order to obtain more information on the role of hygromycin in swine feeding this experiment was conducted in which hygromycin was fed alone and in combination with chlortetracycline (aureomycin) to wormed and unwormed pigs.

Experimental Plan

One hundred twenty weanling pigs were used in this experiment. They were divided into twenty lots of six pigs each and fed in concrete floored pens with connecting outside pens. Ten lots of pigs (Lots 1 to 10) were wormed with sodium fluoride prior to starting the experiment and the other ten lots were not wormed. Two lots of pigs from each of the wormed and unwormed groups received the following treatment:

Wormed	Unwormed	
Lots 1 and 6	Lots 11 and 16	Control
Lots 2 and 7	Lots 12 and 17	Chlortetracycline, 15 grams per ton
Lots 3 and 8	Lots 13 and 18	Hygromycin B, 12 grams per ton
Lots 4 and 9	Lots 14 and 19	Both hygromycin and chlortetracycline
Lots 5 and 10	Lots 15 and 20	Hygromycin B to 100 pounds in weight

The composition of the basal rations is shown in table 1.

Table 1 Composition of Ration Fed

	To 100 lbs.	100-200 lbs.
Ground yellow corn	84.0	91.0
Soybean oil meal	10.0	5.0
Tankage	5.0	2.5
Steamed bone meal	0.5	1.0
Trace mineral salt	0.5	0.5
Vitamin premix [1]	0.1	0.1

[1] Supplied 1 mg. riboflavin, 2 mg. calcium pantothenate, 4.5 mg. niacin, 5 mg. choline and 4.5 mcg. vitamin B_{12} per pound of ration.

Summary of Results

Data on average daily gain, feed efficiency and roundworm infestation are presented in table 2.

During the period from weaning to 100 pounds both chlortetracycline and hygromycin fed pigs gained faster than the control animals with the combination of the two antibiotics giving the best response.

[1] Presented at South Dakota State College Swine Field Day, September 11, 1958.

Table 2 The Effect of Hygromycin on Growing-Finishing Swine

	Control	Chlortetra-cycline	Hygromycin	Hygromycin + Chlortetra-cycline	Hygromycin to 100 lbs.
			Ave. Daily Gain		
Initial to 100 lbs.					
Wormed [1]	1.37	1.44	1.58	1.67	1.57
Unwormed [1]	1.50	1.58	1.60	1.83	1.66
100 - 200 lbs.					
Wormed	1.97	2.01	1.75	1.82	1.85
Unwormed	1.89	2.20	1.92	2.02	1.91
Initial to 200 lbs.					
Wormed	1.69	1.76	1.64	1.76	1.73
Unwormed	1.72	1.92	1.79	1.94	1.80
Initial to 100 lbs.			Feed Per Cwt. Gain		
Wormed	300	294	256	268	291
Unwormed	298	285	274	273	275
100 - 200 lbs.					
Wormed	364	358	367	336	364
Unwormed	389	341	371	361	358
Initial to 200 lbs.					
Wormed	339	334	331	310	336
Unwormed	354	319	334	326	329
			Roundworm Ova Per Gram of Feces		
Wormed	10	265	0	0	155
Unwormed	590	410	0	0	10

[1] Two lots of six pigs each on each treatment. Ave. initial weights were 37.5 and 43.5 pounds for the wormed pigs and 38 and 45 pounds for the unwormed lots.

In all five treatments the unwormed pigs gained faster than those that were wormed with sodium fluoride previous to starting the trial. It appears that this treatment may have caused a reduction in rate of gain which lasted throughout the first phase of the trial.

Less difference in gains existed from 100 to 200 pounds body weight. In the case of the wormed pigs the control and chlortetracycline groups gained quite similarly but the lots getting hygromycin alone or in combination did not gain at as rapid a rate. With the unwormed pigs chlortetracycline increased gains more when fed alone than when fed with hygromycin. Hygromycin alone did not affect the rate of gain. Removing the hygromycin at 100 pounds did not affect the rate of gain significantly of these pigs compared to the groups where hygromycin was fed from 100 to 200 pounds. During the entire growing period chlortetracycline increased gains when fed alone or with hygromycin in both wormed and unwormed pigs. Hygromycin alone had no effect of gains when fed to 100 pounds or for the entire period.

All of the treatments resulted in some increase in feed efficiency. This was especially true with the unwormed pigs. These differences in feed required per pound of gain were noted during both phases of this trial.

Hygromycin controlled roundworms effectively as there were no roundworm ova present in the feces of any of the pigs receiving either hygromycin or the combination of hygromycin and chlortetracycline. These counts were made at the completion of the trial. Removing hygromycin at 100 pounds decreased the worm counts but did not eliminate them entirely.