

**Influence of Aureomycin, Stilbestrol, Protomone  
and Their Combination on Feed Lot Performance,  
Carcass Characteristics and Plasma  
Protein Bound Iodine in Lambs**

**Owen Thomas, III, J. S. Copenhaver, and C. C. Brooks**

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VIRGINIA AGRICULTURAL EXPERIMENT STATION

VIRGINIA POLYTECHNIC INSTITUTE

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INFLUENCE OF AUREOMYCIN, STILBESTROL, PROTOMONE AND THEIR  
COMBINATIONS ON FEED LOT PERFORMANCE, CARCASS CHARACTERISTICS  
AND PLASMA PROTEIN BOUND IODINE IN LAMBS

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INTRODUCTION

Many lamb producers of Virginia strive to grow spring lambs that reach a desirable slaughter weight and grade by June. Lambs that do not reach this weight or grade by mid-summer months fail to make satisfactory gains on pasture during the late summer months. Why many of these light weight, low grade lambs fail to gain rapidly early and fail to gain satisfactorily in late summer has not been clearly answered.

There are several possible causes: (1) an inherent lack of growth hormone, (2) subclinical disease, (3) lower metabolic rate due to high temperature, (4) internal parasites, and (5) lower quality feed from pasture during summer months.

Studies were designed to: (1) Ascertain the effect of feeding low grade light weight lambs in dry lot during late summer, and (2) explore the cause of poor growth rate and low grades in certain early spring lambs by determining the influence of chlortetracycline (aureomycin), stilbestrol, iodinated casein (protomone) and combinations of these on rate of gain, feed efficiency and carcass grades.

EXPERIMENTAL PROCEDURE

Lambs of mixed breeding weighing an average of 64 pounds and grading utility were purchased in southwestern Virginia from an order buyer. These lambs were drenched with phenothiazine containing lead arsenate, sheared and sprayed for external parasites. They were put on pasture and given a light grain feed for about two weeks before going on test. The lambs were divided into 10 outcome groups of 8 lambs each on the basis of weight, sex, breeding and grade. They were then randomized to treatments from these outcome groups.

The starting ration was a ground mixture of 50% alfalfa, 45% shelled yellow corn and 5% molasses plus 0.1 pound of soybean oil meal per lamb. The oil meal was added to the mix each day. This feed was self-fed after a two-week hand feeding period. Long alfalfa hay as given ad. lib. the first day and reduced daily until it was completely removed at the end of one week. After two weeks, the molasses in the feed was replaced with corn. A mineral box containing a mixture of 9 parts salt and 1 part phenothiazine in one compartment and steam bone meal in the other was kept available to the lambs at all times. Aureomycin was mixed into the hay corn portion of the ration to supply a level of 10 mg. per pound of feed. other additives were mixed into the soybean oil meal at the level needed to give the test lamb a level of 0.4 gms. of protomone and 2 mg. stilbestrol daily. The lambs were housed in a quonset type building that was open on one side.

After lambs were on test 75 days, blood samples were drawn and analyzed for protein bound iodine.\*

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\* The authors are indebted to Mr. N. O. Price of the Biochemistry and Nutrition Department for these analyses.

## RESULTS AND DISCUSSION

Fecal egg counts indicated that the lambs were heavily infected with internal parasites and considerable difficulty was experienced in reducing the number of parasites. It was necessary to administer phenothiazine in a drench every two weeks as well as feed it in salt in order to reduce the infection as measured by fecal counts. All lots of lambs made satisfactory gains after the number of parasites were reduced.

Stilbestrol promoted faster gains and increased feed efficiency in this trial as is indicated in Table 1. The greatest increase was in lots that received stilbestrol or stilbestrol in combination with aureomycin. Feeding stilbestrol showed little effect on slaughter grade.

Protomone failed to increase gains or feed efficiency. It should be stated that there is little data upon which to determine an optimum level of this material. The level used in this trial was based upon estimated secretion rate of thyroxine by fast gaining lambs at the Michigan Station.\* Protein bound iodine of the blood serum of these lambs shows that this level of protomone did increase the level of this substance in the serum.

Aureomycin failed to stimulate gain or feed efficiency. It was noted that aureomycin-fed lambs consumed less feed at the beginning of the trial, but by the end of the feeding period they were consuming more feed. Both live and carcass grades were higher in lots that received aureomycin.

Protein bound iodine (Table 2) was higher in lots that had received aureomycin. These differences in protein bound iodine between all lambs receiving aureomycin and all lambs not receiving it were significant when analyzed statistically. This indicates the need for further study of the effect of antibiotic on thyroid activity and metabolic rate.

## SUMMARY

A feeding trial was conducted in late summer to determine the influence of stilbestrol, aureomycin, protomone and combinations of these feed additives on light-weight, low-grade lambs fed a fattening ration in dry lot.

(1) Stilbestrol increased rate of gain and feed efficiency when fed at the level of 2 mg. per ~~pound of feed~~. *lamb daily*

(2) Aureomycin fed at a level of 10 mg. per pound of feed increased carcass grade but failed to increase gain or feed efficiency. Protein bound iodine of the blood serum was higher in lambs that were receiving aureomycin.

(3) Protomone fed at the level of 0.4 gms. per lamb daily failed to increase rate of gain or feed efficiency but did increase protein bound iodine of the blood serum.

(4) Heavy infestations of internal parasites appeared to be the primary cause of poor performance of these lambs before they were placed on test.

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\* Singh, O.N., H. A. Henneman, and E. P. Reineke; 1956. The Relationship of Thyroid Activity to Lactation, Growth and Sex in Sheep. J. Animal Science 15:625

TABLE I. FEED LOT PERFORMANCE OF LAMBS FED AUREOMYCIN, STILBESTROL AND PROTOMONE ALONE AND IN COMBINATIONS (84 DAYS ON TEST).

	I	II	III	IV	V	VI	VII	VIII
								Aureomycin
								+
								Stilbestrol
				Stilbestrol		Aureomycin	Aureomycin	+
				+		+	+	
	Control	Stilbestrol	Protomone	Protomone	Aureomycin	Stilbestrol	Protomone	Protomone
No. of lambs	9	10	10	9	10	10	10	9
Av. initial wt., lbs.	64.8	62.8	64.5	63.0	64.7	64.6	65.7	68.0
Av. final wt., lbs.	93.9	96.6	92.2	91.9	91.3	100.4	98.3	97.2
Total gain, lbs.	29.1	33.8	27.7	28.9	26.6	35.8	32.6	29.2
Av. daily gain, lbs.	.346	.402	.330	.344	.316	.426	.388	.345
Daily feed/lamb								
Grain, lbs.	1.46	1.58	1.54	1.43	1.44	1.68	1.62	1.49
Hay, lbs.	1.50	1.61	1.57	1.47	1.47	1.71	1.65	1.52
S.B.O.M., lbs.	.10	.10	.10	.10	.10	.10	.10	.10
Molasses, lbs.	.03	.03	.03	.03	.03	.03	.03	.03
Feed/100 lbs. gain								
Grain, lbs.	414	386	459	409	447	388	411	423
Hay, lbs.	441	408	486	436	475	409	434	449
S.B.O.M., lbs.	28	25	30	28	30	22	25	28
Molasses, lbs.	10	7	9	9	9	6	7	8
Slaughter grade*	12.0	12.4	11.6	11.7	12.6	12.8	13.2	12.8
Federal carcass grade*	12.0	12.1	11.9	12.2	12.4	12.6	13.1	13.2
No. Av. Prime	-	-	-	-	-	-	1	-
No. Low Prime	-	-	-	-	-	-	1	-
No. High Choice	-	2	1	2	1	1	1	4
No. Av. Choice	4	2	2	1	5	5	2	4
No. Low Choice	3	3	3	4	2	3	5	-
No. High Good	1	1	3	1	1	1	-	1
No. Av. Good	1	2	1	1	1	-	-	-
Dressing percent	50.9	50.2	49.8	50.1	50.2	49.7	52.0	51.5

\* Code: Ave. Good - 10; High Good - 11; Low Choice - 12; etc.

TABLE II.

## PLASMA PROTEIN BOUND IODINE

Treatment	No. Sheep	Av. P.B.I. Mcg. I/100 cc.
Control	10	6.49
Stilbestrol	10	6.56
Protomone	10	10.02
Stilbestrol + Protomone	9	10.49
Aureomycin	10	7.00
Aureomycin + Stilbestrol	10	6.78
Aureomycin + Protomone	10	11.47
Aureomycin + Protomone + Stilbestrol	10	12.18