Effect of Aureomycin Supplementotion on Milk Yield

BY
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SUMMARY

In a pilot trial under normal dairying conditions it was found that aureomycin supplementation at the level of 0.1 mg. per lb. bodyweight resulted in an average increase of 2.1 lb. of milk daily during the latter part of lactation. No statistical difference in yield or length of lactation was noticed between the control and experimental groups.

INTRODUCTION

The use of chlortetracycline (aureomycin-American cyanamide) resulting in improved weight gains in dairy calves was first reported in 1950 (Loosli and Wallace) and has since been followed by numerous papers amplifying the subject.

Work published a year later confirmed previous findings that 130 mg. aureomycin daily had no effect on milk production in Friesian cows (Haq, Rusoff and Gelpi, 1951) and it has generally been concluded, particularly from work with beef cattle, that any effect of antibiotics in ruminants was achieved by controlling sub-clinical disease.

Christian (1958) reported from North Carolina, increases in milk yield of up to 13 per cent., between control and aureomycin-fed cows. Lassiter and Brown (1959) reported on two trials and claimed that the increase in milk yield obtained made aureomycin supplementation an economic proposition.

In view of these findings and the knowledge that in other species, the type of feed greatly influences results obtained from antibiotics, it was decided to try to simulate the American results under Queensland conditions.

PROCEDURE

Twenty cows at the Veterinary School Animal Husbandry Farm were used for the trial and divided into two groups, the animals in each group being paired on calving dates. Except in one pair, where calving was two months apart, each animal of a pair calved in the same month. It was felt that this method of selection minimised effects of temperature, rainfall and availability of natural feed.

The aureomycin-fed animals had the antibiotic and its carrier mixed with the rations fed in the bails so that each animal received 0.1 mg. of antibiotic per lb. bodyweight daily. To maintain normal dairy practice, milk yield and butter fat were tested at monthly intervals in accordance with the Queensland herd recording scheme. Neither the experimental nor control group received any treatment contrary to normal dairy practice.

RESULTS

Previous trials elsewhere had suggested that aureomycin might increase the length of lactation and delay the fall in milk yield. The experimental period was continued over 150 days and arranged to coincide with the terminal phase of lactation of 80 per cent. of the cows which were milked until dry. One animal was severely injured by barbed wire and had to be withdrawn. Results for the remaining nine pairs of animals are given in the Table.

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The average daily yield from start of lactation to commencement of the trial was not satistically different between the two groups. Following supplementation the experimental group averaged 2.1 lb. more milk daily.

The standard error of the difference between the control and aureomycin-fed group showed this difference to be not significant. However, as this result included figures from two groups of animals at the commencement of lactation, the figures were submitted for analysis of variance by Mr. J. James. His report is appended at the end of the paper.

The increase in length of lactation was not significant.

TABLE 1.

	GROUP Control	Aureomycin
Mean daily production per cow for terminal 5 months of previous Lactation (lb. of milk)	17.1 S.D. ± 8.4	17.7 S.D. ± 3
Difference in lb.	0.7 lb.	
Mean daily production per cow for 150 days of trial (lb. of milk)	12.3 S.D. ± 2	14.4 S.D. ± 4
Difference in lb.	2.1 lb.	
Mean length of production in months	11.8	12.2

DISCUSSION

This pilot trial under normal dairying conditions, employed cows whose production was typical of that throughout the State. Only one gave over 4 gallons daily, the remainder had maximum production figures of between 2½-3½ gallons.

Lassiter and Brown (Loc. cit.) reported increases of 0.21 lb. and 1.81 lb. in two trials. They also reported a better response for the latter half of the trial. The increase reported by Christian (Loc. cit.) was also of a similar nature to those. in the present experiment.

On considering the response to aueromycin in sub-clinical disease, the School herd has always had a low incidence of mastitis; bloat has not been seen for a number of years, and no visible alteration in the health of control or experimental animals was noted over the experimental perid.

Analysis of variance with non-orthogonal data treated by method of fitted constants.

Source	DF	SS	MS
Treatments	1	2.5650	2.5650
Periods	2	397.6385	198.8192
Interaction	2	5.7490	2.8745
Error	12	109.3925	9.1160
TOTAL	17	530.7800	

The analysis shows that the period of lactation has a highly significant effect, but that neither the antibiotic treatment nor the interaction beween periods of lactation and treatment had significant effects.

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DISCUSSION

R. J. Moir (W.A.) asked whether there was any effect on the ruminal microflora and whether there was any immediate depression or raising in milk yield at the commencement of the trial?

Answer.—This point was not examined in the trial.

Professor J. K. Loosli (Cornell) wanted to know whether any milk bloating was observed at the initiation of the trial.

Answer.—There was no demonstrable bloating observed at all during the trial.

W. Stephens (Tas.)—On a farm with a lower standard of husbandry would Au feeding have a more beneficial effect?

Answer.-This may be the case.

R. Beilharz (N.S.W.) felt that the numbers involved may be rather small in view of the size of the standard deviations reported in Table I of the paper; that the numbers would preclude any significance with a difference of this amount.

Answer.-He agrees that this may be so and that if butterfat production had been examined this would definitely be so.