EVALUATION OF ICI 139603, A NEW GROWTH PROMOTER FOR SHEEP FED ROUGHAGE DIETS

C.A. GRAHAM: S.R. EDWARDS: G.J. CULMMING* and P.C. LEES*

The ionophore, ICI 139603, has been reported to improve liveweight gains and feed efficiency of cattle and sheep by altering rumen VFA production from acetate to propionate and sparing protein from rumen degradation (Rowe 1983). These experiments report the effect of ICI 139603 supplementation on nitrogen, balance, rumen parameters, wool production and growth rate of sheep fed a high protein roughage diet.

In experiment 1, mature rumen fistulated wethers (50 ± 5 kg) were fed lucerne meal (16.0% C.P.) ad libitum and dosed for 30 days with graded levels of the compound using a slow release device (Laby 1978). During the last 5 days nitrogen balance measurements were made and rumen samples obtained. In experiment 2, crossbred lambs were individually fed ad libitum a lucerne chaff diet (19.8% C.P.) medicated with graded levels of ICI 139603 for 70 days. Liveweights were recorded weekly, feed intake daily, and greasy fleece weight by shearing at the end of the experiment.

Table 1 The mean (±S.E.) effect of ICI 139603 on nitrogen balance, VFA ratios ([acetic + butyric] ÷ Propionic), protozoa1 numbers, greasy fleece weight, liveweight change and feed intake

	Experiment 1				Experiment 2			
Dose mg/kg LWT	n	N balance g/hd/day	VFA ratios	Prot. numbers	n	Greasy fleece wt	LWT gain g/hd/day	Feed intake g/hd/day
0	5	7.3 (1.1)	3.40 (0.22)	618 (39)	20	1.4 (0.07)	136.1(7.7)	1429(53)
0.05	5	10.3 (3.5)	2.85*(0.16)	408*(60)	19	1.6*(0.08)	126.5(6.4)	1406(51)
0.10	5	9.6 (4.0)	2.95*(0.15)	394*(40)	19	1.7*(0.08)	149.1(10.5)	1423(67)
0.15	4	11.2*(1.0)	2.75*(0.09)	290*(40)	19	1.9*(0.06)	130.8(6.4)	1306(49)
0.20		(No treatment)			19	1.9*(0.06)	156.8(4.2)	1441(30) NS

*Means are significantly different from controls ($p<0.05$)
n = No. of animals. NS = not significant

N balance was significantly increased ($p<0.05$) in experiment 1 at dose level 0.15 mg/kg while VFA ratios were altered and protozoa1 numbers were reduced at all dose levels ($p<0.05$). In experiment 2, greasy fleece weight was significantly increased at all dose levels ($p<0.05$) but only at the highest dose level was there a significant increase ($p<0.05$) in liveweight gain. The depression in feed intake thought to be due to inadequate mixing of the compound in the diet affected liveweight gain but not wool growth. We suggest that the increased wool growth was due to sparing protein from rumen degradation. The compound, appropriately administered appears to have the potential to increase wool growth and liveweight gain on high protein roughage diets.

LABY, R.H. (1978) Australian Patent Application No. 35908/78.

ROWE, J.B. (1983) In "Recent Advances in Animal Nutrition in Australia" (in press), (University of New England Publishing Unit, Armidale)

*ICI "Merrindale" Research Station, Dorset Road, Croydon, Victoria, 3136.