

SEASONAL VARIATIONS IN SKIN SECRETIONS OF BEEF CATTLE

By N. M. TULLOH *

Summary

Skin secretions were estimated by petroleum ether and water extracts of mid-side coat samples taken from Hereford and Shorthorn steers. Relative to the amount of clean hair present, extracts were low in winter, they rose in the spring, and fell in the late summer and autumn. On a unit area basis, water extracts were high in winter and summer, and low in spring and late autumn.

I. INTRODUCTION

The value of a coat score as a criterion for selecting thrifty cattle under tropical conditions has been convincingly demonstrated by Turner and Schleger (1960). However, coat score, which is an assessment of coat type, is presumably a reflection of hair follicle activity. Therefore, it is possible that other measures of hair follicle activity, such as the amounts of skin secretions in the coat, may be useful as selection criteria in either tropical or other environments.

II. EXPERIMENTAL

This paper reports preliminary observations on skin secretions which were estimated by petroleum ether and water extracts of mid-side coat samples taken at intervals from 10 Hereford and 11 Shorthorn steers. These cattle were grazed on irrigated perennial pastures at the Melbourne and Metropolitan Board of Works Farm, Werribee (lat. $37^{\circ}50'S$). Coat samples were taken from adjacent sites, so that each sample represented part of the coat which had not been previously clipped. The mean age of these cattle on 22.vii.58 was 10 months.

III. RESULTS

Results are shown in Table 1.

Relative to the amount of clean hair present, ether and water extracts were low in winter, they rose substantially during the spring and fell during the late summer and autumn. These changes were similar in direction to those shown by body weight gain.

When the water extracts were expressed in mg/cm^2 of the sample area, values were high during the winter and summer, and low during the spring and late autumn. When the ether extracts were expressed on this basis, seasonal changes were not clear.

Similar amounts of extracts were obtained for each breed. Except in the case of ether extracts expressed in mg/cm^2 , there was good agreement between breeds in the direction of seasonal changes of these extracts.

The interpretation of these results is complicated by seasonal effects on the growth rate and shedding of fibres in cattle coats. However, as samples were taken

* School of Agriculture, University of Melbourne.

TABLE 1

ETHER AND WATER EXTRACTS OF MID-SIDE COAT SAMPLES AND BODY WEIGHT GAIN
AT VARIOUS SAMPLING DATES (MEANS FOR EACH BREED)

	Breed*	Sampling Dates						
		23.vii.58	16.ix.58	10.xi.58	21.i.59	17.iii.59	21.v.59	23.vii.59
Ether extract (% coat sample wt)	H	1.33	2.55	3.05	3.38		2.20	2.21
	S	1.06	0.97	3.45	1.69	2.67	1.14	—
Water extract (% coat sample wt)	H	2.64	2.71	6.23	7.33		1.74	3.94
	S	1.53	1.95	5.18	7.21	4.37	2.93	3.55
Ether extract (mg/cm ²)	H	0.58	0.61	0.44	0.69		0.76	0.79
	S	0.48	0.39	0.58	0.40	0.56	0.32	
Water extract (mg/cm ²)	H	1.18	0.64	0.86	1.45		0.59	1.41
	S	0.68	0.76	0.87	1.66	0.86	0.82	1.41
Body weight gain (kg/day) †	H	0.32	0.33	0.78	0.58	0.39	0.29	0.33
	S	0.09	0.41	0.82	0.52	0.29	0.37	0.20

* H: Hereford.

S: Shorthorn.

† Gain based on change in weight since previous coat sampling, except on 23.vii.58, when based on change in weight during preceding 33 days.

from previously unclipped areas, successive samples may be expected to show an accumulation of skin secretions until the fibres are shed, taking these accumulated secretions with them. When the coat is short and growing actively, the rate of skin secretion may be high, but the absolute amount of secretion present may be small compared with the amount that accumulates during a cycle of hair growth.

Differences occurred between animals in amounts of secretions obtained and, on particular sampling dates, there was some indication of a relation between amounts of secretions and performance. These results will be published in more detail elsewhere.

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V. REFERENCE

TURNER, H. C., and SCHLEGER, A. V. (1960) .-*Aust. J. Agric. Res.* 11: 654-663.