HAIR GROWTH OF CATTLE IS STIMULATED BY MELATONIN

R.P. Wettemann[1], S.C. Smith[2], K.S. Lusby[3], and H.A. Tucker[4]

Story in Brief

Yearling Hereford and Hereford x Angus steers were used to determine the effect of daily melatonin consumption on growth of hair. Treatment commenced on June 29 and steers were exposed to natural photoperiod. Melatonin was added to the daily diet of treated steers and was fed at 1:30 p.m.. At four weeks, steers treated with melatonin had longer hair on the hip than controls. At 12 weeks, steers treated with melatonin had 38% more hair on the shoulders than control steers. We conclude that oral consumption of melatonin commencing at the summer solstice increases hair growth in cattle.

(Key Words: Hair, Growth, Melatonin, Steer.)

Introduction

Duration of daily photoperiod controls hair growth in many species. Yeates (1955) demonstrated that if day lengths that cattle were exposed to were artificially reversed, hair growth pattern was also reversed. Photoperiod is the most important factor controlling hair growth in cattle; however temperature and nutrition can also influence hair growth. Cattle at the same latitude and time of year had a heavier hair coat at cooler temperatures (Berman and Volcani, 1961). Nutrition influences the shedding of hair in cattle (Yeates, 1958).

In most species, concentrations of melatonin, secreted by the pineal gland, are greater during periods of darkness than during light periods. Melatonin is orally active in the bovine. The objective of this study was to determine the effect of melatonin on hair growth of steers.

Materials and Methods

Twelve yearling Hereford and Hereford x Angus steers were used to determine the effect of daily feeding of melatonin on hair growth. Steers (744 ±

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[1]Regents Professor [2]Area Extension Livestock Specialist [3]Professor
[4]Professor, Michigan State University

55 lb) were randomly allotted to treatments and fed a diet to maintain weight for 12 weeks. Treatment started on June 29 and steers were exposed to natural photoperiod. Melatonin (1.8 mg/100 lb body weight) was added to the daily diet of treated steers (n=6) and was fed at 1:30 p.m. Hair growth and body weight were evaluated after 8 and 12 weeks of treatment. Hair was clipped at the shoulder and hip to evaluate hair weight per area (about 100 cm^2).

Results and Discussion

Daily gain of the steers was not influenced by treatment. Steers gained .71 lb/day. After eight weeks of melatonin treatment, treated steers had 23% more hair on the hip when compared with control steers (Table 1). Hair weight on the shoulder was also 38% greater in treated than control steers.

After 12 weeks of treatment, the amount of hair per unit area was 38% greater on the shoulders of treated steers when compared with control steers. The increased amount of hair at week 12 (September 21) in control steers, compared to amount at week 8 (August 24) is most likely caused by the natural stimulation of decreasing day length. During shorter days, greater amounts of melatonin are secreted by the pineal gland of many animals. We conclude that increased hair coat in cattle during decreased day length is probably regulated by increased secretion of melatonin by the pineal.

Table 1. Influence of melantonin on gain and hair weight of steers.

Criteria	Week of treatment	Treatment		
		Control	Melatonin	SE
Daily gain, lb		.16	.13	.02
Hair weight (mg/cm^2)				
Hip[a]	8	10.99	13.49	.89
Shoulder[b]	8	6.97	9.60	1.11
Hip	12	15.57	17.70	1.78
Shoulder[c]	12	10.36	14.27	.72

[a] Treatments differ (P<.15).
[b] Treatments differ (P<.06).
[c] Treatments differ (P<.005).

Literature Cited

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