

## E21

## OESTRADIOL RECEPTORS IN GROWING ANTLERS

G.K. Barrell, C.M. Lengoc and P.D. Muir

Animal Sciences Group, Lincoln College, Canterbury, N.Z.

Mineralisation of growing, cartilaginous antlers is profoundly influenced by sex steroids and can be stimulated artificially by supplying these hormones to deer. Although oestradiol is very effective in this role it raises a number of questions about the relationship between this hormone and antlers.

To measure affinity and binding capacity (Scatchard analyses) of oestradiol receptors in this tissue one antler from each of two red deer stags was removed at 20, 46, 66, and 84 days from the commencement of antler growth.

Specific, high affinity receptors for oestradiol were detected in all regions of the antlers after 20 days (see table). However the tips had significantly more ( $P < 0.005$ ) receptor activity than the other regions of the antlers. In the tip and middle regions receptor affinity generally increased with age of the antlers.

Mean ( $\pm$ S.E.M., n=2) binding affinity ( $K_a$ ,  $\times 10^{10}/M$ ) and capacity (BS, fmol/mg protein) of tissue from the tip, middle and base of growing antlers.

| Age(d) | Tip - $K_a$ ; BS                 | Middle - $K_a$ ; BS              | Base - $K_a$ ; BS                |
|--------|----------------------------------|----------------------------------|----------------------------------|
| 20     | 0.19 $\pm$ 0.13; 1.6 $\pm$ 1.12  | 0.00; 0.00                       | 0.00; 0.00                       |
| 46     | 0.96 $\pm$ 0.14; 49.1 $\pm$ 8.76 | 0.57 $\pm$ 0.22; 2.24 $\pm$ 0.23 | 1.30 $\pm$ 0.13; 0.94 $\pm$ 0.04 |
| 66     | 2.33 $\pm$ 0.26; 31.0 $\pm$ 6.91 | 0.37 $\pm$ 0.10; 0.95 $\pm$ 0.26 | 0.82 $\pm$ 0.26; 0.25 $\pm$ 0.10 |
| 84     | 2.30 $\pm$ 0.05; 50.3 $\pm$ 9.70 | 0.92 $\pm$ 0.03; 0.37 $\pm$ 0.02 | 0.75 $\pm$ 0.45; 0.87 $\pm$ 0.43 |

These results demonstrate the occurrence of receptors for oestradiol in growing antlers and that they are present prior to the conversion of this tissue to bone. This would indicate that the major phase of antler mineralisation is initiated by steroid hormones or their metabolites rather than by the formation of receptors for these compounds.