

ADRENAL PROGESTERONE PRODUCTION IN RED DEER

G.K. Barrell, and L.M. Meikle

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

This study investigated the activity of the adrenal glands in relation to reproductive physiology of red deer.

Five classes (n=4) of deer, all of which were considered to lack either ovaries or functional corpora lutea, were injected i.v. with 240µg of an ACTH-analogue (Synacthen, Ciba Geigy). Jugular venous blood samples were collected via an indwelling cannula from 100 minutes prior to injection of ACTH-analogue until 300 minutes after injection. Progesterone and cortisol concentrations of plasma were determined by ELISA assays.

In all cases (seasonally anoestrous hinds, hinds in the follicular phase of oestrus, pre-pubertal hinds, ovariectomised hinds, pre-pubertal stags) injection of ACTH-analogue resulted in an elevation of mean plasma progesterone levels (peaks ranging from 4 to 10 nmol/l) within 30 minutes. The response of pre-pubertal females was higher ( $p < 0.02$ ) than that of all other classes. Mean plasma levels of cortisol were elevated 1.7 to 2.6-fold within 40 minutes of injection of the analogue (peaks ranging from 104 nmol/l to 160 nmol/l) for all classes of deer. Stress associated with commencement of blood sampling elevated plasma cortisol and progesterone in many animals (15 and 13 out of 20, respectively), but in most cases hormone levels had regressed to basal values by the time of injection of the analogue.

These results strongly implicate the adrenal glands as a source of progesterone in red deer of both sexes and indicate that stress may stimulate secretion of progesterone directly from this source. Also they have shown that prepubertal female deer have a greater sensitivity, in terms of progesterone response to ACTH, than their adult counterparts.