

SEASONAL VARIATION IN SENSITIVITY TO OESTRADIOL FEEDBACK IN RED DEER HINDS

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This study investigated whether seasonal changes in reproductive activity of red deer were due to changes in the sensitivity of LH secretion to oestradiol (E_2) feedback. LH secretion pattern and the LH response to a GnRH challenge ($2\mu\text{g}$ GnRH/hind) were measured in 4 ovariectomised red deer hinds, with and without a s.c. oestradiol implant (12 mg E_2 implant, Compudose 200D), before and during the breeding season.

After receiving E_2 implants on 4/3/88 mean plasma LH concentrations of hinds decreased ($p < 0.001$) but increased ($p < 0.01$) in mid April, coincident with the onset of the breeding season in entire hinds. There was no change in mean plasma LH concentration when the E_2 implants were removed in June. LH results from acute sampling on 4 dates are shown in the table.

LH pulsatility and LH response to $2\mu\text{g}$ GnRH i.v. of ovariectomised red deer hinds. Means in rows with different superscripts are significantly different ($p < 0.05$).

		Prior to the breeding season		During the breeding season	
		without E_2	with E_2	with E_2	without E_2
Date		29/2/88	15/3/88	21/4/88	14/6/88
Frequency of pulses (no. of pulses/4 h)	Mean	3.25 ^b	1.25 ^a	2.75 ^b	3.00 ^b
	s.e.m.	0.25	0.25	0.63	0.71
Response to GnRH (ng/ml)	Mean	3.13 ^a	2.71 ^a	6.37 ^b	2.29 ^a
	s.e.m.	0.72	0.29	0.76	0.37

E_2 reduced the frequency ($p < 0.05$) of LH pulses during anoestrus but not during the breeding season and the increased LH response ($p < 0.001$) to GnRH in E_2 -treated hinds during the breeding season showed that E_2 had enhanced pituitary responsiveness at this time. These results indicate that seasonal changes in LH secretion in red deer hinds reflect major changes in sensitivity to the feedback effects of E_2 .

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