TREATMENT OF SEASONALLY ANOESTROUS RED DEER HINDS WITH GnRH INJECTIONS FOR 72h

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Red deer hinds are seasonal breeders with the anoestrous period lasting from about September through to March-April. It is probable that seasonal transitions in reproductive activity are mediated by the hypothalamo-pituitary-ovarian system. Studies in other domestic ruminants indicate that the anoestrous season is characterised by reduced LH secretion and that mimicking the follicular phase of the oestrus cycle by elevating LH concentrations can induce ovulation. The aim of the present study was to investigate the response of red deer hinds to elevated LH concentrations by pulsatile GnRH treatments during anoestrus.

Seven 2 year old hinds which had been anoestrus for 41 to 114 days ($\bar{x}$=83 d) were treated with 1.5 μg GnRH i.v. every hour (n=4) or 2 hours (n=3) for 72 h beginning on the 10th December. Blood samples were withdrawn hourly via an indwelling catheter from -24 h to 72 h. Samples were also taken every 15 min for 6 h on each day and LH concentrations measured with an ovine double antibody RIA. In addition daily samples were taken before and after treatment and progesterone measured by solid phase RIA.

Prior to GnRH treatment animals had few endogenous LH pulses (0-2/24 h). Each injection of GnRH produced an immediate, but transient increase in LH concentration of 1-3 ng/ml. Only one animal (treated hourly) responded to treatment with an increase in LH concentrations of preovulatory magnitude (up to 10 ng/ml for 6-8 h) approximately 54 h after the beginning of treatment. This hind subsequently showed an increase in progesterone secretion indicative of a normal length cycle. Four other hinds had increases in LH of smaller magnitude which were not considered pre-ovulatory surges (<5 ng/ml for <6 h) while the remaining two hinds did not show any response other than to each injection. None of these six hinds showed any clear increases in progesterone secretion indicative of a normally functioning corpus luteum.

These results indicate that exogenous GnRH can induce an increase in LH secretion showing that the pituitary is functional during seasonal anoestrus. However as treatment resulted in ovulation in only one hind it is suggested that a reduction in LH secretion is not the sole reason for seasonal anoestrus.