

GROWTH HORMONE RELEASE IN RELATION TO IGF1 LEVEL IN YOUNG RED DEER STAGS

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Growth hormone (GH) secretion is pulsatile in cattle (1) and sheep (2,3). The aim of this study was to determine whether or not GH is secreted in a pulsatile manner in red deer stags. A further aim was to investigate whether there was any relationship between a parameter of GH secretion and IGF1 level.

At monthly intervals from 3 (March) to 15 (February) months of age 6 red deer stags, penned individually and fed a concentrate diet to appetite, were blood sampled every 30 minutes for 26 hours via a cannula inserted into the jugular vein. Plasma was stored at -20°C until assayed for growth hormone (all samples) (4) and IGF1 (2 samples per run) (5). The resultant GH profiles were analysed using PULSAR (6).

During March and April there was little evidence of pulsatile release, however from May-November GH was released in a pulsatile manner. Pulse frequencies rose from 2/day in May until a maximum of 4/day in September. Pulse amplitude was about 30 ng/ml from May-August but peaked at 70 ng/ml in October. From December-February there was again little evidence of pulsatile release. IGF1 levels remained at about 90 ng/ml until September when they began to increase to a peak of 180 ng/ml which was reached in October. By December they had returned to about 90 ng/ml.

Pulsatile release of GH develops in young red deer stags over the first winter of life, and frequency and amplitude are maximal in spring. At this time plasma IGF1 levels begin to increase. As IGF1 levels reach a maximum, GH pulsatile release diminishes, then ceases. IGF1 levels fall one month later. We hypothesise that a) IGF1 release is stimulated by frequent high pulses of GH, b) the data are consistent with a negative feedback role for IGF1 on GH.

References

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