Relationship between gonadotrophic releasing hormone dose and luteinising hormone pulse amplitude in red deer (*Cervus elaphus*) hinds

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This study was carried out to determine if changes in amplitude of Leuteinising Hormone (LH) pulses in red deer (*Cervus elaphus*) hinds were a consequence of changes in the amount of hormone secreted in each endogenous pulse of Gonadotrophic Releasing Hormone (GnRH). Four seasonally anoestrous hinds were treated with 0, 2, 4 and 16 µg GnRH i.v. such that they received each dose level on each of 4 consecutive days in a Latin square design. Blood samples were collected every 15 minutes for 2 h before, at 5, 10 and 15 minutes after injection of GnRH. and at 15-minute intervals for a further 1.75 h. Plasma LH concentration was determined by radioimmunoassay using ovine LH standards and tracer. Amplitude of each induced pulse of LH was determined as the increment in plasma LH concentration from the nadir value to the subsequent peak.

Plasma LH concentration peaked within 15 minutes of injection of each dose of GnRH and the amplitude of evoked pulses of LH was directly related (P<0.001) to dose of GnRH (see Table 1).

This relationship between amplitude of LH pulse (ng/ml, Y) and $\log_{10}$ GnRH dose + 1.0 (µg, D) is described by the equation $Y = 7.69D-0.92$ ($r^2 = 0.63$) which is in agreement with data from other published studies. The finding supports the possibility that changes in amplitude of LH pulses in red deer may arise from changes in amplitude of the GnRH pulses.

Table 1. Mean (± s.e.m.) amplitude of LH pulses in response to i.v. injection of GnRH in red deer hinds.

Dose of GnRH (µg)	Induced amplitude (ng/ml)
0	0.18± 0.85[a]
2	1.37 ± 0.85[ac]
4	3.85 ± 0.85[bc]
16	9.41 ± 0.85[d]

Means with different superscripts are significantly different (P<0.001).