INSULIN-LIKE GROWTH FACTOR 1 AND BODY SIZE IN RED DEER STAGS

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Insulin-like growth factor 1 (IGF1) correlates with antler growth (1) and body growth (2) in penned red deer stags. The present study aimed to investigate the relationship among plasma concentration of IGF1, body growth and carcass composition in grazing stags.

28 ten month old stags were kept at pasture from September-February and bled, weighed and antlers measured fortnightly. Plasma was analysed for IGF1. The stags were injected with somatostatin conjugated to bovine α globulin but no titres against somatostatin, nor growth or endocrine responses to treatment were detected. All stags were slaughtered in February (aged 15 months); organ weights were recorded and the carcasses were analysed chemically for water, fat and ash.

The stags began the study weighing 60.7 $\pm$ 1.4 kg and were 96.3 $\pm$ 2.0 kg at the end. They grew rapidly in spring and early summer but growth rate slowed in mid summer before increasing again in late summer.

Mean IGF1 for each stag throughout the study correlated positively with antler length ($p<0.001$), total liveweight gain ($p<0.001$) hot carcass weight ($p<0.01$) fat free carcass weight ($p<0.01$) eye muscle area ($P<0.001$) carcass fat weight (NS) and carcass fat percentage (NS). Thus IGF correlates significantly with all parameters of body size except fat.

IGF1 correlated positively with antler growth rate ($p<0.001$) calculated individually for each stag during each fortnight. IGF1 correlated positively with the spring phase of liveweight gain calculated as above ($p<0.001$) but negatively ($p<0.01$) with liveweight gain during the late summer growth phase.

The relationships shown between IGF1 and growth in penned stags also pertain in grazing animals, and in addition IGF1 is closely associated with carcass lean.

References

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