103 CIRCULATING LEVELS OF INSULIN-LIKE GROWTH FACTOR 1 (IGF1) IN THE PLASMA OF YOUNG MALE AND FEMALE RED (*Cervus elaphus*) AND RUSA (*Cervus timorensis*) DEER DURING DEVELOPMENT IN A SUB-TROPICAL ENVIRONMENT.

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There is an annual cycle of plasma IGF1 levels in male red deer stags with peaks in circulating concentrations corresponding with the seasonal peaks in growth rate and velvet antler growth. However it is not known whether female red deer have a seasonal pattern of IGF1 levels or whether such a pattern exists in rusa deer which are a seasonal tropical species. In the present study, plasma IGF1 was measured throughout the year in male and female red and rusa deer to investigate the pattern of release in relation to body growth and additionally antler growth in the males. Forty-four rusa (17 male and 27 female) and 33 red deer (20 male, and 13 female) were kept at pasture at Gatton Queensland, latitude 28°S and were about 3 months of age at the start of sampling. Plasma samples were obtained by jugular venepuncture at approximately monthly intervals for one year from each deer while restrained in a pneumatic crush. All animals were weighed monthly and antler length was measured in the males. IGF1 was measured by radioimmunoassay following automated reverse phase HPLC extraction. IGF1, weight and antler data were analysed by ANOVA. The red deer had a seasonal pattern of growth in both sexes, with a lower growth rate in winter and a rapid weight gain in spring and summer (130 g/day v 170 g/day for male and 70 g/day v 117 g/day for females in winter and spring-summer respectively). Male and female red deer had a seasonal pattern of IGF1. Plasma levels in males were lowest in June and highest in November (297 ng/ml v 613 ng/ml) and were lowest in the females in July and highest in November (199 ng/ml v 279 ng/ml). This elevation coincided with peak weight gain and antler growth in the males. In contrast the growth rate of rusa deer did not differ between seasons and was 120 g/day for male and 108 g/day for females respectively. Neither sex of rusa deer had a seasonal pattern of IGF1; mean plasma levels were 527 ng/ml and 399 ng/ml for males and females respectively. Individual male rusa deer had elevated IGF1 levels during velvet antler growth although this was not synchronised between individuals. These data indicate that the seasonal increase in IGF1 is not solely associated with antler growth as it is found in female deer which grow seasonally, but is observed only in deer with a seasonal pattern of weight gain. The rusa deer have generally higher plasma levels than red deer which may reflect a different pattern of composition of live weight gain. The seasonal nature of growth and IGF1 secretion indicates that the red deer appears to be a good model to further study the mechanism of growth factor action at the tissue level.