

THYROID FUNCTION IS INVOLVED IN SEASONAL REPRODUCTIVE REGRESSION IN RED DEER STAGS

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This study investigated the role of thyroid function in regulation of seasonal reproduction in red deer stags. In experiment 1, yearling red deer stags were either thyroidectomized (THX, n=3) or were controls (n=5). During the following 18 months, testicular diameter was measured fortnightly and blood samples were collected weekly and assayed for testosterone. Responses of LH and testosterone to a GnRH (10 µg i.v.) challenge were measured at strategic stages of the trial. THX stags maintained hard antlers and did not undergo the same seasonal declines in testicular diameter, plasma testosterone concentration, or responsiveness of LH and testosterone to GnRH during spring as observed in the control stags. In experiment 2, thyroxine (T4) was administered as a s.c. implant (40 mg) to 4 THX stags in spring and these were studied in comparison with 4 THX controls. The T4-treated stags had elevated plasma triiodothyronine concentration, reduced testis diameter, non-detectable plasma testosterone concentration and cast their antlers in spring and early summer (Oct-Dec), whilst none of the non-supplemented controls underwent these changes.

These results demonstrate that the thyroid hormones are involved in regulation of seasonal changes in red deer stags, and are required specifically for the seasonal regression of reproductive activity in spring and summer.

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