

# Effects of Strategic Short-term and Long-term Melatonin Treatment on Estrous Cyclicity in Fallow Deer

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Preliminary data are presented for an ongoing trial designed to determine the effects of strategic treatment with SC melatonin implants (Regulin; Regulin Australia, Melbourne, Australia) on seasonal estrous cyclicity and live-weight changes of fallow does (*Dama dama*). Sixteen adult (> 3 years old) does were allocated to one of four treatment groups, balanced for live weight, in October 1988. All does were in their third trimester of pregnancy. Group 1 does (summer implantation; 120-day treatment period) each received double melatonin implants on four occasions at 28-day intervals from 2 November (i.e., 30 to 40 days prior to parturition); group 2 does (continuous implantation; 18-month treatment period) received implants at 28-day intervals from 2 November, with the implantation schedule continuing until May 1990; group 3 does (winter implantation; 120-day treatment period) will receive implants on four occasions at 28-day intervals from 31 July; and group 4 does (controls) have received no implants. All does are being run continuously with single vasectomized bucks fitted with ram mating harnesses to mark estrous does. Harness crayons are replaced twice weekly and observations to record mating marks are conducted daily. All does are being blood sampled by jugular ven-

epuncture twice weekly from 2 November 1988 to 30 May 1990, and plasma will be analyzed for concentrations of progesterone. Live weights are recorded at 2-week intervals. All 16 does fawned in December 1988. However, six of eight does treated during late pregnancy (groups 1 and 2) failed to initiate lactation and subsequently lost their fawns. The remaining eight does all reared their fawns successfully. Does in groups 1 and 2 exhibited first estrus of the 1989 breeding season 6 to 8 weeks earlier than groups 3 and 4. The mean ( $\pm$  SEM) dates of first estrus were 1 March  $\pm$  7.2 days, 22 February  $\pm$  7.7 days, 22 April  $\pm$  1.3 days, and 20 April  $\pm$  1.9 days for groups 1, 2, 3, and 4 respectively. The data presently (July 1989) indicate that three does in group 1 are still exhibiting 19- to 25-day estrous cycles, all does in group 2 have become anestrus after exhibiting only four estrous cycles, and all does in groups 3 and 4 are still cyclic half-way through their normal breeding season. Melatonin treatment has resulted in marked live-weight loss in group 1 and 2 does relative to groups 3 and 4. Continuous melatonin implantation (group 2) has been associated with the most severe reductions in live weight, and this may explain the rapid reversion to an anestrus state.

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