Temporal Relationship Between Estrus, the Preovulatory LH Surge, and Ovulation in Fallow Deer

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To determine the precise timing of ovulation relative to the onset of estrus and the preovulatory LH surge in fallow deer (*Dama dama*), 20 (> 5 years old) does were allocated to two treatments designed to synchronize estrus on or about 17 May. Treatment 1 does (prostaglandin-induced estrus) received intravaginal progesterone-releasing devices for 13 days followed by an injection of 1500 mg coprostenol on day 12 (15 May) of the subsequent estrous cycle. Treatment 2 does (progesterone-induced estrus) received CIDRs for a 13-day period, with withdrawal on 15 May. All does were run with crayon-harnessed bucks (10:1 ratio) from the start of synchronization treatment (1800 h 15 May). Five does per treatment were blood sampled via in-dwelling jugular cannulae every 2 h for 70 h from coprostenal administration/CIDR withdrawal, and the plasma was analyzed for LH. Does within each treatment were randomly allocated to one of four ovarian examination times (12, 16, 20, or 24 h after onset of estrus). Laparoscopy was repeated at 12-h intervals until ovulation (hemorrhagic rupture point) was recorded. Does failing to exhibit estrus were examined 72 h after synchronization treatment. Seventeen does exhibited estrus at a mean (± SEM) interval from synchronization of 44.6 ± 3.6 h for Treatment 1 ($n = 9$) and 34.1 ± 2.5 h for Treatment 2 ($n = 8$). The incidence of ovulation was 0% at 12, 16, and 20 h ($n = 4$, 4 and 4 observations), 50% at 24 h ($n = 10$), and 100% at 28, 32, and 36 h ($n = 4$, 5, and 3). The onset of the preovulatory LH surge ($n = 8$) occurred at the onset of estrus, with maximum LH concentrations (30 ng/ml) occurring 4 to 8 h later. Of three does not exhibiting estrus, two (Treatment 2) had active corpora lutea (indicating ovulation during CIDR insertion) and one (Treatment 1) had a large unruptured follicle 72 h after prostaglandin treatment. The data indicate that ovulation in fallow deer occurs ~ 24 h after the onset of estrus and 16 to 20 h after the peak of the preovulatory LH surge.

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