ABSTRACTS

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EXPRESSION OF OVARIAN FOLLICLE STIMULATING HORMONE (FSH) AND LUTEINISING HORMONE (LH) BINDING SITES DURING THE FOLLICULAR PHASE IN THE BITCH

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Introduction - In contrast with most mammals, the canine growing follicle starts to luteinise several days before ovulation and final follicular growth is, to date, inefficiently controlled.

Objectives - In order to better understand the pituitary regulation of follicular growth in this species, specific binding sites for Follicle-Stimulating Hormone (FSH) and Luteinising Hormone (LH) were localised and quantified by autoradiography. [125I]-porcine gonadotrophins were incubated on ovarian sections collected from 9 adult Beagle bitches during the follicular phase.

Materials and methods - A total of 227 follicles were analysed, either before the LH peak (n = 117, diameter ranging from 132 to 4275 μm) or after the LH peak and before ovulation (n = 110 follicles, 127 to 6000 μm).

Results / Discussion - FSH binding sites were specifically expressed on granulosa cells from the preantral stage onward whereas LH binding sites were detected on granulosa cells of follicles larger than 1 mm in diameter, including luteinised follicles. With high [125I]-pLH concentration, LH binding sites were also detected on the theca cell layer of preantral and small antral follicles. The overall incidence of atresia was 45.8 % and was dependent upon the follicle diameter. Atretic follicles had reduced levels of both FSH and LH binding sites. In healthy follicles, levels of FSH binding sites were the highest in follicles smaller than 1 mm in diameter, whereas levels of LH binding sites increased with increasing diameter. The occurrence of the LH peak had no effect on concentrations of FSH and LH binding sites. In mammals, LH binding sites usually appear when the follicle reach 50% of the preovulatory diameter (Monniaux et al., 1997; Driancourt, 2001). Since the canine follicles ovulate at 5-7 mm in diameter (Reynaud et al., 2006), the canine follicle displays an early LH binding in granulosa cells. Therefore, hormones with LH activity (or conversely hormones inhibiting LH action) might be of great interest to control follicular growth and ovulation in this species.

References
Driancourt MA. Regulation of ovarian follicular dynamics in farm animals. Implications for manipulation of reproduction. Theriogenology. 2001 Apr 1;55(6):1211-39