

論 文 内 容 要 旨

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学位論文題目	Studies on hormonal dynamics and ovarian response to ovulation-inducing treatments (排卵誘発処理に対するホルモン動態と卵巣反応に関する研究)		
<p>内容要旨</p> <p>Over the years, humans have developed a relationship with cattle and other livestock. A systematic rise in livestock production and efficient reproduction have been necessary in this context. Reproduction is critical for various animal species, including livestock. Multiple studies have been conducted to improve the reproductive performance of livestock and achieve efficient reproduction.</p> <p>In the first study, we examined the relationship between gonadotropin-releasing hormone (GnRH)-induced luteinizing hormone (LH) increase profiles in the serum and vaginal mucus of cows. Samples for LH determination were collected from Japanese black beef cows induced oestrus with a controlled internal progesterone-releasing device and administration of cloprostenol immediately before GnRH administration and every 30 min from the start of GnRH administration until 6.5 h. A peak serum LH concentration was clearly identified at 2.5 h post-GnRH administration with serum concentrations returning to near values of pre-GnRH administration after 6.5 h, whereas the peak LH concentration of vaginal mucus was identified 4.5 h after GnRH administration. These results indicated that the peak of LH secretion in vaginal mucus appeared about 2 h after the peak of LH secretion in the serum.</p> <p>Follicular changes throughout the oestrous phase have been poorly documented in queens because of the location and the small size of ovaries. In the second study, we investigated follicular development in queens treated with a combination of equine chorionic gonadotropin (eCG) and human chorionic gonadotropin (hCG) and evaluated the effects of vaginal stimulation by a tomcat on ovulation induction. A hormonal treatment was administered using a simple crossover design. Four queens were administered 150 IU of eCG (day 1) and 250 IU of hCG on days 5 and 6. Half of the queens were mated with a vasectomised tomcat for 3 days after hCG injection. Ultrasound imaging of the ovaries clamped at a subcutaneous site was performed once a day from day 1 to 7, and on day 13, and the serum concentrations of oestradiol and progesterone were examined on days 1, 5, 7, and 13. The mean</p>			

number of follicles gradually increased with the eCG treatment and decreased after hCG injection. The ovulation rate of follicles was significantly higher in the vaginal stimulation group (70.0%) than in the control group (42.6%). During the hormonal treatments, the serum concentration of oestradiol and progesterone did not differ between the two groups. Ultrasound imaging of the ovaries clamped at a subcutaneous site showed that eCG and hCG treatment promoted the follicular growth and corpus luteum formation, respectively. The combination of hCG injection with vaginal stimulation by a vasectomised tomcat enhanced the ovulation rate of follicles.

With these two studies, we were able to confirm the response of gonadotropic hormones in different animal species. The reproductive physiologies of animals vary greatly. We will be glad if our research plays a role in improving fertility in each animal species and contributes to farm management and the conservation of various endangered animal species.