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A STUDY ON SUPEROVULATION AND EMBRYO DEVELOPMENT IN THE DOMESTIC CAT

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Induction of estrus using either follicle-stimulating hormone (FSH) or pregnant mare's serum gonadotropin (PMSG) was carried out in the domestic cat. Estrus signs and ovarian response were observed in the treated cats. To study the *in vivo* embryo transport, embryos were collected from estrus-induced-females that were mated naturally. In addition, the embryo development *in vitro* was also studied.

The rate of confirmed mating, the number of ovulations and the embryo recovery rate were significantly higher when PMSG was used. Thus, the findings of this study suggested that PMSG was more effective than FSH for superovulation in the domestic cat.

Morulae were collected from the oviduct on Days 3 and 4 after mating. Both morulae and blastocysts were collected from the uterus on Day 5, while only blastocysts were collected on Day 10 after mating. These results suggested that it took more than 5 days after mating for the embryo to develop into a blastocyst and to be transported into the uterus. The *in vitro* culture also showed that it took more than 5 days after mating for the embryo to develop into a blastocyst. Morulae that were recovered on Day 4 took more than 3 days, while morulae and blastocysts that were recovered on Day 5 took 1–4 days for hatching to occur. Therefore, it was suggested that hatching occured 6 days after mating.

Factors affecting the *in vitro* culture of embryos, namely, culture medium, type of serum and developmental stage, were examined. The rate of development from morula to blastocyst was significantly higher when TCM 199 was used than when Ham's F10 medium was. In addition, a higher hatching rate was observed with the use of TCM 199 medium. There was no significant difference in the *in vitro* development of Day 4 morulae when the culture medium was supplemented with either calf or cat serum. As for the effect of developmental stage, it was observed that the rate of hatching was significantly higher in morulae recovered on Day 4 than on Day 3. Generally, in all the embryos cultured, the rate of degeneration increased gradually from the 3rd day of *in vitro* culture.