SOME ASPECTS OF ARTIFICIAL INSEMINATION IN THE BITCH, USING FROZEN SEMEN

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Abstract

The development of freezing techniques for dog semen allowing long term storage of semen from valuable stud dogs and its use locally or thousands of miles away has opened up exciting new prospects for dog breeding. However, it has not been possible to consistently achieve acceptable pregnancy rates and litter sizes with frozen semen. The reason for this arises from the many factors involved in processing and inseminating frozen canine semen and their complex inter-relationships. In order to successfully use semen prepared in this way it is essential to understand the effect processing has on the fertilising capacity of sperm and the implications this may have regarding the techniques required for semen insemination. The key problems revolve around establishing the period for which such semen remains able to fertilise ova, being able to identify when ovulation takes place so that timing of insemination occurs when ova are ready for fertilisation, and having a technology that will allow placement of the semen in a position from which fertilisation is likely to be achieved.

In this study 18 bitches were divided into three groups on a random basis. Group 1 bitches were inseminated twice with four straws of semen (a total insemination dose of 240 to 280 x 10^6 live sperm), the semen being deposited into the uterus using the 'Norwegian' insemination technique. Group 2 bitches received the same insemination dose deposited into the uterus using the 'Endoscopic' technique (a technique developed for this trial), and Group 3 bitches received 25% of the semen dose in Group 1 and 2 (a total insemination dose of 60 to 70 x 10^6 live sperm), inseminated using the 'Endoscopic' technique. The semen all came from one stud dog. Insemination timing was based on blood progesterone concentration determined using a commercial ELISA kit. The results from the kit were compared with RIA determinations of plasma progesterone to validate its accuracy. Visual observations of the bitch, vaginal cytology and vaginal endoscopy observations were also considered in relation to the timing of insemination.

The pregnancy rate over all three groups was 83.3% with a mean litter size of 7.5 (range 4 - 11) pups. There was no difference in pregnancy rate or litter size between the groups.

The insemination protocol adopted in respect of semen dose, insemination timing and site of deposition of semen demonstrated that it was possible to achieve good pregnancy rates and litter sizes following the insemination of frozen semen. The new 'Endoscopic' method of depositing the semen into the uterus was shown to provide an effective alternative method to the 'Norwegian' technique. The results of insemination with a significantly lower sperm dose of frozen semen demonstrates that equivalent pregnancy

rates and litter sizes to those achieved with high doses of semen, can be achieved when the semen used is of high quality. It was also shown that using blood progesterone concentration as the basis for timing insemination provides an alternative and perhaps more appropriate method of ensuring insemination occurs at the optimum time than traditional methods used; the progesterone kits were found to be reliable in this trial and were particularly useful because they were simple and provided results within hours.

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