Effect of volume and timing of induction of ovulation on conception rate following deep horn insemination in camels (*Camelus dromedarius*)

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Artificial insemination (AI) in camelids offers many challenges due to the induced nature of ovulation in this species as well as the viscous nature of semen. In the camel racing industry, very few males are kept intact and therefore availability of superior males with known track records in racing is limited. In this study we investigated the feasibility of fresh semen insemination with low sperm numbers using deep horn insemination (DHI). Our objectives were to compare two volumes of inseminate and timing of ovulation induction treatment in relationship to AI.

Multiparous female camels that have passed the breeding soundness examination required in our laboratory were allocated to 4 groups. Group 1 (n=25) and 2 (n=24) were inseminated with 0.25 mL extended fresh semen. Groups 3 (n=25) and 4 (n=24) were inseminated with 0.5 mL of extended fresh semen. Ovulation was induced with buserelein (25 µ, IM) at the time of insemination (Groups 1 and 3) or 24 hours prior to insemination (Groups 2 and 4). Semen was collected by a modified bovine artificial vagina from one male and diluted with a commercial extender (Green Buffer®, IMV Technologies, L’Aigle, France) with added 20% egg yolk. All females were inseminated with a flexible catheter guided transrectaly to the tip of the uterine horn ipsilateral to the ovary with a dominant follicle (minimum 12 mm and maximum 15 mm). Concentration of inseminates was adjusted to contain approximately 24 million progressively motile spermatozoa. Ovulation was confirmed by serum progesterone level 7 days after insemination using an ELISA kit (Merieux, France). Pregnancy diagnosis was performed by transrectal ultrasonography at 18 days following DHI. Pregnancy rates were compared using Chi-square analysis.

Pregnancy rates for group 1 to 4 were respectively, 0 (0/25), 8.3% (2/22), 48% (12/25) and 58.3% (14/24). There was a significant effect of insemination volume (P<0.001) on pregnancy rate. Although the pregnancy rate in camels induced to ovulate at the time of insemination was lower than that of camels inseminated 24 hours following GnRH, this difference was not statistically significant.

These results show that acceptable pregnancy rates can be achieved with low sperm number (24 million vs the usual dose of 100 to 150 million) when DHI is used. This technique could solve the problem of shortage of semen from highly valuable males during the peak of the breeding season. Timing of ovulation induction does not seem to be an important factor when fresh semen is used. However, other studies in progress in our laboratory show an advantage in administering GnRH 24h before insemination particularly when reducing the dose to 10 million spermatozoa or when using frozen-thawed semen.

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