Vol 18 No 2, p 251-253

EFFICACY OF BUSERELIN TO INDUCE OVULATION IN CAMELS

Sumant Vyas
Senior Scientist, National Research Centre on Camel, P.B. No. 07, Bikaner 334 001, India

ABSTRACT

Ovaries of 4 adult non-lactating, non-pregnant one humped female camel (*Camelus dromedarius*) belonging to the herd of National Research Centre on Camel, Bikaner, India, were examined using real-time ultrasonography for the presence of follicle with ≥ 1.0 cm diameter. Buserelin acetate 40 µg i.v. was used to induce ovulation. Sequential ultrasound examination at 24, 36, 48, 60, 72, 84 and 96h of the Buserelin administration revealed that ovulation did not occur up to 96 h in all four female camels.

Key words: Camel, ovulation, ultrasound

The dromedary camel is considered to be an induced ovulator, with ovulation induced mainly by coitus (Cristofori *et al*, 1986; Musa and Abusineina, 1978; Novoa, 1970) but ovulatory stimuli other than mating can also be effective (Marie and Anouassi, 1987). A major difficulty with camel artificial insemination is to ensure that the inseminated animals ovulate (Arthur, 1992). Acceptable conception rates following insemination in the camel could only be achieved if ovulation is achieved reliably either with mating to a vasectomised camel or through exogenous administration of hormones (Anouassi *et al*, 1992). Reliability of hormone preparations like human chorionic gonadotropin and GnRH analogues for inducing ovulation has to be worked out (Deen *et al*, 2005). Present study was aimed to evaluate efficiency of Buserelin acetate (a GnRH analogue) to induce ovulation in dromedary camel.

Materials and Methods

The study was conducted on 4 female dromedary camels belonging to the herd of National Research Centre on Camel, Bikaner, India. The camels had calved at least once and showed no clinical signs or other evidence of metritis or other uterine and ovarian disorders. Ultrasound scanner-200 (Pie Medicals) was used to assess follicular presence and size as per the method described by Vyas and Sahni (2000). Buserelin acetate (Receptal, Intervet) 40 µg was administered i.v. to the females when they were found to possess at least one follicle measuring ≥ 1.0 cm diameter. The ultrasound examination was repeated at 24, 36, 48, 60, 72, 84 and 96 h of the Buserelin administration.

Results and Discussion

The ovarian status as revealed by ultrasound examination at 0, 24, 36, 48, 60, 72, 84 and 96 h after administration of Buserelin is depicted in table 1. Ultrasound examination prior to Buserelin treatment revealed presence of at least one follicle (0.9 to 1.94 cm diameter) in 3 females (J 117, B 477 and B 387). One female (J 405) had one large follicle of 3.70 cm diameter. In all 11 follicles ranging from 0.6 to 3.7 cm diameter were sequentially monitored. Two females (J 405, B 387) had 2 follicles, one female (B477) had 3 follicles and one (J 177) had 4 follicles. The Ovulatory response was not observed in any of the 4 females up to 96 h of Buserelin administration.

Though camel is an induced ovulator, yet mechanical stimulation of the cervix, which triggers ovulation in species such as the cat and the rabbit, does not induce ovulation in the camel (Elias *et al*, 1984; Musa *et al*, 1990; Musa and Abusineina, 1978).

Both human chorionic gonadotropin (hCG, 3000 IU) and 20 µg Gonadotropin releasing hormone (GnRH) analogue (Buserelin) injected intravenously induced ovulation within 36-48 h after treatment in the presence of 1-1.9 cm diameter growing follicles (McKinnon and Tinson, 1992; Musa *et al*, 1990; Skidmore *et al*, 1996). Skidmore *et al* (1996) reported that efficacy of 20 µg GnRH analogue Buserelin to induce ovulation vary with follicular size. A higher (81%) ovulation rate was achieved when follicular diameter was 1-1.9 cm and it decreased to 60, 29 and 0 per cent with follicular diameter of 0.5-0.9, 2.0-2.9 and >3.0 cm, respectively. The present study corroborates with the above findings in the way that

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Table 1. Effect of Buserelin as ovulation inducing agent.

S.N.	Camel No.	Ovary	Follicle size (cm) on 0 day	Ovulatory response at different hours						
				24	36	48	60	72	84	96
1.	J 405	RO	1.60	No	No	No	No	No	No	No
		LO	3.70	No	No	No	No	No	No	No
2.	J 117	RO	0.87	No	No	No	No	No	No	No
			0.6	No	No	No	No	No	No	No
		LO	1.11	No	No	No	No	No	No	No
			1.05	No	No	No	No	No	No	No
3.	B 477	RO	1.37	No	No	No	No	No	No	No
		LO	1.94	No	No	No	No	No	No	No
			1.34	No	No	No	No	No	No	No
4.	B 387	RO	0.91	No	No	No	No	No	No	No
		LO	1.84	No	No	No	No	No	No	No

ovulation did not occur in the presence of >1.8 cm diameter follicle.

In another study female camels having follicle ≥ 1.0 cm diameter were mated with virile studs (Vyas *et al*, 1999). But ovulation did not occur in 33.3% camels. Anouassi *et al* (1992) supported the hypothetical presence of an ovulation-inducing factor in the seminal plasma of the dromedary camel. Zhao *et al* (1990) suggested the presence of a proteinous substance in seminal plasma that is responsible for ovulation in the bactrian camel. Anouassi *et al* (1992) found a definite increase in the incidence of ovulation that were mated to a vasectomised male prior to being inseminated with diluted semen indicating that, at least in the dromedary camel, mechanical stimulation of the cervix or some other physical aspect of coitus is also important for induction of ovulation. El Wishy (1987) suggested that pheromonal aspects of mating and the presence of specific factors in seminal fluid, all act synergistically to induce ovulation. It suggests that ovulation in camel is not simple but complex mechanism governed by multiple factors. Ovulatory response in the female camel could be the result of a combination of stimuli, including a chemical factor in seminal fluid, neurohormonal response to the mechanical stimuli of coitus, pheromonal effects due to the presence of the male and optimum size of follicle.

In the present study, treatment of dromedary female with Buserelin 40 µg i.v. failed to induce ovulation. A better understanding of the mechanisms involved in the induction of ovulation is necessary to establish a reliable and practical method for the development of artificial insemination (AI) techniques in the dromedary camel.

Acknowledgement

Author thankfully acknowledges the Director, National Research Centre on Camel for permission to carryout the experiment and technical support provided by Mr Nand Kishore.

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