

## EFFECT OF CLOMIPHENE CITRATE AND SUPER-OV TO AUGMENT OVARIAN ACTIVITY IN PRE-PUBERTAL CAMEL HEIFERS

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(Received : 05-02-2008; Accepted : 21-04-2008)

Dromedary camel has low reproductive efficiency due to breeding seasonality, longer gestation period and long calving interval (About-Ela, 1991). The age at puberty is reported to be 4-5 years for camels maintained at farm (Khanna *et al.*, 1990) and at field level it is reported to be 5-7 years (Arthur, 1992). Higher age at puberty reduces the lifetime calf crop production. Exogenous hormones and drugs acting on pituitary have been successfully employed to reduce the age at puberty in other domestic animals (Purohit and Bishnoi, 1993). In the present investigation porcine follicle stimulating hormone (FSH) (Super - OV<sup>®</sup>, AUSA International, USA) and clomiphene citrate (Siphene<sup>®</sup>, Serum International, India) were used for induction of ovarian activity and subsequent fertility in prepubertal female camels.

### Materials and Methods

Nineteen pre-pubertal camel heifers belonging to National Research Centre on Camel, Bikaner were used for the present study. The experiment was conducted in the breeding season (December - February). The camels were three years old ( $\pm 2$  months) and weighed 270 - 300 kg. They were examined for presence or absence of follicular activity on the ovary before the start of experiment by the ultrasound. The 5.0 MHz annular array mechanical sector endovaginal probe of scanner - 200 (Pie medicals, Netherland) was

used for examination of camels restrained in sternal recumbency as per method described previously by Vyas and Sahani, (2000). Follicular activity was not observed in any camel before the start of experiment. The camels were divided into three groups.

17- $\alpha$  hydroxy progesterone caproate, 250 mg, i/m was administered on day 1 in all animals of group I (n=11) and II (n=4). In group I a total dose of 37.5 i.u. of Super-OV<sup>®</sup> was administered i/m in four divided doses - 7.50, 4.50, 3.75 and 3.00 i.u. on day 8,9, 10 and 11, respectively. Daily dose was further divided into two equal doses and was administered at 12h interval. In group II, Clomiphene citrate 100 mg was given daily per os on day 8 to 12. In group III (control group, n=4) sterile normal saline was administered 1 ml twice daily i/m on day 1 and 8-11. All the animals were examined by ultrasound for ovarian activity from day 12-17.

The animals observed to have follicle > 10 mm or more in diameter in either of the ovaries were mated with virile camel stud on two consecutive days.

### Results and Discussion

The ultrasonography revealed presence of one ovulatory follicle in all the animals of group I. In one camel two ovulatory follicles were observed. Two or more smaller (0.5 - 0.9

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cm) follicles were observed in seven camels. All eleven camels were successfully mated with virile camel stud. Subsequent observations revealed presence of single corpus luteum in all camels mated to virile camel stud. The ultrasonography using linear array rectal probe on 30 days post mating confirmed pregnancy in four out of eleven camels at first service and four out of remaining seven camels at second service. Therefore a total of eight out of eleven (72.7%) camels became pregnant. In group-II, only one animal showed the presence of ovulatory follicle on the ovary after the treatment. It was mated but she did not conceive. In the rest of the group II camels, follicular development was not observed. Follicular development was not observed in any of the camels in the group - III (control).

The porcine FSH used in the present experiment could elicit follicle growth in all the prepubertal female camels. Multiple ovulation and multiple corpus luteum formation was not observed in the camels mated with the virile studs. Pregnancy was achieved in eight out of eleven (72.7%) treated female camels. The follicular development in prepubertal female camels as a result of hormonal therapy with low conception was reported by previous workers (Yagil and Etzoin, 1984; Rai *et al.*, 1991; Agarwal *et al.*, 1996). In the present experiment higher overall pregnancy rate was achieved in group - I camels. Development of multiple corpora lutea in treated camels was reported to be one of the probable cause of pregnancy failure in one of the previous experiment (Agarwal *et al.*, *loc.cit*). Similarly, Yagil and Etzoin (*loc. cit*) and Rai *et al.*, (*loc. cit*) found that the pre-pubertal camels failed to conceive at the induced heat, suggesting that uterus at this stage was not prepare for nidation.

Clomiphene citrate therapy was found

to be successful in inducing follicle growth in only one of four camels and the mating did not result into pregnancy. Previous studies in cattle have shown estrus induction percentage of 57% in cows and 83% in heifers (Purohit and Bishnoi, *loc. cit*) which is higher than the present study, but it is known that differences exist in the physiology of camel and cattle. The results conclude that with the hormonal treatment, age at first conception can be successfully reduced in camel heifers.

### Summary

In the present investigation the use of porcine FSH (Super - OV; group I) and clomiphene citrate (group II) was observed on induction of ovarian activity and fertility in prepubertal she camels (three years  $\pm$  2 months). All the animals in group I responded to the treatment and eight out of eleven heifers conceived (72.7%). Only one (out of four) animal responded to the treatment in group II but failed to conceive.

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