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NEW APPROACH FOR SUPEROVULATION AND EMBRYO RECOVERY IN THE ONE HUMPED CAMEL

BY

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SUMMARY

The first attempt in Egypt, to realize induction of superovulation and embryo recovery in camels, was conducted using 7 lactating camels, 5 to 12 years old. A new approach for superovulation was carried out on 3 animals (group ♀). Luteal phase was induced in these animals by fertile matings. The embryo was recovered from each camel on day 7 post-estrus. On day 9, PMSG (2000 I.U) was administered to induce superovulation. Two days later, luteolysis was achieved by the application of two doses of PGF_2 a. This approach was compared with another regimen (group ♀♀, 4 camels) including the application of ear implant (Synchromate B) for 5 days followed by injecting the same dose of PMSG on the day of implant removal.

The results revealed higher ovulation rate in camels of group ♀ (5.33 ±0.27) as compared to those of group ♀♀ (4.00 ± 0.35). Also, more ($P < 0.05$) embryos were collected from camels of group ♀ (1.67 ± 0.27 vs 0.5 ±0.25). These results were associated with higher ($P < 0.05$) progesterone levels in group ♀ (2.03 ± 0.28) than in group ♀♀ (1.4 ± 0.11 ng/ml) at the initiation of superovulation. Detailed information about progesterone levels for the individual camels during the different treatment days as well as the method used for embryo recovery in this species are included.

INTRODUCTION

Camels are of considerable economic importance as they can produce food when cattle, sheep and goat are not physiologically able. Therefore, the camel is considered the perfect farm animal for arid areas because of his particular adjustment to drought conditions.

Opportunities to improve reproductive efficiency in the camel are limited due to the continued use of traditional systems of reproductive management in most breeding herds. These age-old methods make it difficult to be sure that the optimum number of females are pregnant at the end of the season, and they can also lead to widespread venereal infections which will significantly lower fertility (Cooper et al., 1990). The techniques of artificial insemination and embryo transfer can both be employed to overcome some of these problems, especially to impregnate as many females as possible at the start of the breeding season, thereby giving them the best possible chance to conceive again, after calving, in the next breeding season. Embryo transfer can also be used in its more characteristic rate to rapidly reproduce progeny from desirable genetic combinations.

It has been shown that camels are induced ovula-

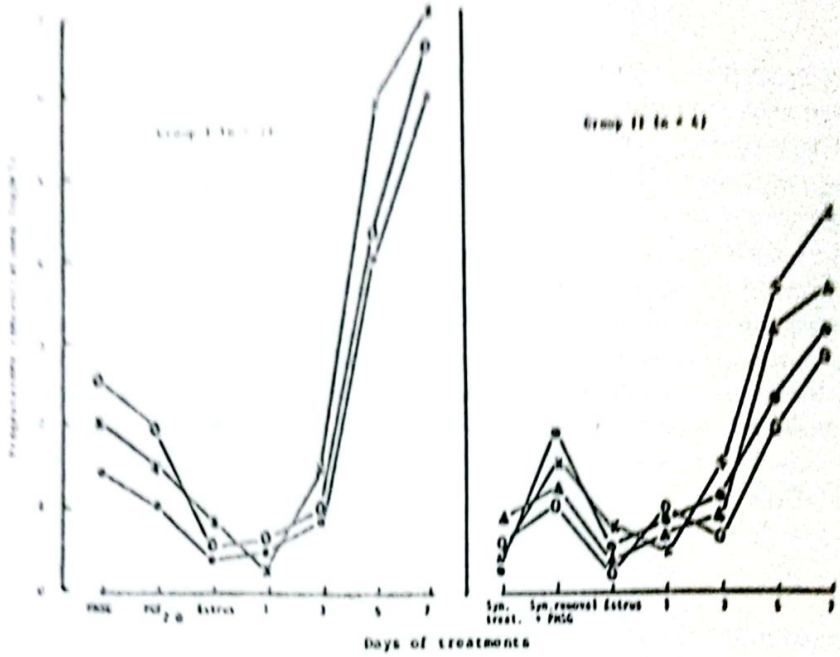

Fig.(1):Plasma progesterone concentration in Dromedary camels superovulation during leuteal phase induced by fertile mating (group 1) or during luteal phase stimulated by synchrmate B (syn.treat.) ear implants (group 2).

significant (P< 0.05). No follicles could be palpated in camels of both groups on the day of recovery.

Embryo recovery:

Five embryos (3 compact morulae and 2 blastocysts) were recovered from the superovulated camels in gorup 1. In addition, two morulae were collected from two camels during the first flushing (non-superovualted camels). In gorup 2, only two morulae were flushed from two superovulated camels (Table 1). The mean number of recovered embryos was higher (P < 0.01) in gorup I (1.67 ± 0.27) than in gorup 2 (0.50 ± 0.25). The rate of recovery of the flushig media averaged 95% in both non-superovulated and superovulated camels (range 92-99%).

Progesterone assay:

Progesterone cocentration during the different treatment days for individual camels is illusterated in Fig. 1. The mean concentration of progesterone at the initiation of treatment (Table 1) was higher in the first than in the second group (2.03 ± 0.28 vs 1.40 ± 0.11; p < 0.05). The difference in hormone concentration between the two groups was non-significant during the following treatment days up to the day 5 post-estrus. At that time as well as on the day of recovery progesterone levels in group I shot higher (P < 0.01) than in group 2.

DISCUSSION

The current investigation represents the first attempt in Egypt to realize induction of superovulation and embryo recovery in the one humped camel. The results revealed that superovulation was induced in all camles of both groups using 2000 IU PMSG. Interestingly, when PMSG was administered during luteal phase induced by fertile matings (group I), the magnitude of the superovulatory response was higher than that observed when it was administered against the background of the exogenous progesteroe (group II). This finding was associated with higher progesterone levels at the initiation of superovulation in the former gorup. It was emphasized that higher levels of progesterone at the start of superovualtion tended to suppress the basal LH discharge from initial injection of gonadotrophin to injection of prostaglandin; this allowed for greater storage of LH and subsequently produced a broader LH surge with a higher peak level (Callesen et al., 1988). Such an LH discharge pattern has been found to be favourable in terms of ovarian response and embryo quality (Jensen et al., 1982 and Donaldson,

1985). On the contrary to our results, **Bourke et al. (1992)** reported higher ovulation rate in camels treated with PMSG in the presence of Norgestomet implant than those received PMSG during a GnRH induced luteal phase. Generally, the mean ovulation rate across all camels of both groups (4.66 CL) was close to that reported in the same species (5.66 CL) by **Anouassi and Ali (1990).** At the same time, the ovarian response in camels is compared well with 4.32 CL reported in buffaloes **(Ismail et al., 1991)** but is considered low when compared to the ovulation rat (15 CL) found in the cattle **(Looney et al., 1988).**

This study proofs that embryo recovery can be performed in camels in squating position. This, perhaps was uncomfortable for the examiner because the situ was not provided with a crush suitable for the camel. **Yagil and Van Creveld (1990)** described a crush for camel restraint to conduct embryo recovery in standing position. Also, embryo recovery was performed in standing position by placing the camel in a trake **(Anouassi and Ali, 1990).** It is important to point out that even in squating position about 95% of the fluid infused into the uteri was recovered. This figure was similar to which reported (98-100%) in camels flushed in standing position **(Anouassi and Ali, 1990 and Cooper et al., 1990).** The collection medium was fairly clear and free from blood contamination in all camels. However, **Anouassi and Ali (1990)** observed mucus in most of the flushed camels. They claimed that this often masks the embryos and delays the moment of embryo transfer.

Similarly to the magnitude of the ovulation rate, higher number of embryos was collected from camels primed by their own endogenous progesterone (group I) as compared to those primed by Synchromate B (group II). Moreover, embryo recovery rate was much higher (31.25%) in group I than in gorup II (12.5%). These findings were in consistent with those reported in the same species by **Bourke et al. (1992).** In addition to the advantages of the higher ovulation rate and number of recovered embryos provided by the first regimen, it was possible to collect more embryos before gonadotrophin therapy. In this study, two embryos were collected from the three camels of gorup I before PMSG treatment. They constitute 40% of the total number (five embryos) of recovered eggs collected from the superovulated camels of this gorup.

We can conclude that superovulation in the dromedary camels during the luteal phase induced by fertile mating have better results than those superovulated during the luteal phase stimulated by Synchromate B ear implants.

Although the present results are promising, yet further experiments on a large number of camels are needed to support our findings.

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