

**EFFECT OF PROSTAGLANDIN F<sub>2</sub> & ON  
INDUCTION OF PARTURITION IN SHE-CAMELS  
(CAMELUS DROMEDARIUS)**

BY

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**INTRODUCTION**

The exogenous induction of parturition in a given species enables the implementation of intensive management practices e.g. programmed group feeding of dams, set time weaning of calves and group rearing of the weaned stock, thus removing the burden of single animal management. In the one humped camel (*Camelus dromedarius*) the female in labor tends to wander for seeking a suitable site for calving, thus hampering assistance in case of difficult births (Arthur et al., 1985).

Furthermore, the great variation in gestation length in she camel Elwishy (1987) complicates the issue still-further. The induction of synchronized labor in groups of pregnant she camels would aid in concentrating calving and leads to reduced losses by reducing unobserved calving difficulties.

The aim of the present study is to examine the possible use of a synthetic analogue of prostaglandin F<sub>2</sub>& (Cloprostenol, Estrumate) for the induction of calving in the pregnant she camel.



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### MATERIALS AND METHODS

#### Animals:

Five grazing preparturient libyan she camels were used. The day of gestation varied between 380 and 383 days post-mating. The animals were gathered in kraals for the night. The experimental group was allowed to graze in close proximity to attendant for ease of observation and handling.

#### Hormone Treatment

All animals received an intramuscular injection of 500 microgram prostoglandin analogue (Cloprostenol, Estrumate, Cooper). Blood samples were collected by acute Jugular venipuncture from the restrained sitting female, plasma progesterone and oestradiol 17-B were estimated by RIA method as previously described by Dobson and Dean (1974) validated by Cooke and Knifton (1980).

The intra-and inter-assay coefficients of variation (CV) for progesterone were 44% (n=20) and 12.3% (n=18), respectively. For plasma of low progesterone concentration (0.8ng) and 4.2% (n=20) and 11.8% (n=20), respectively. For a plasma sample of high concentration (5 ng) the sensitivity of assay was 48 pg/tube. Extraction efficiency was  $85.7 \pm 4.9\%$  and the results were corrected for extraction losses.

The intra-and inter assay coefficient of variation for oestradiol 17-B were 7.3 (n= a) and 10.2% (n=10), respectively. For plasma of low hormone concentration (10 pg) and high E. 17-B concentration (100 pg), the respective intra-and inter-assay CV were 4.1 (n=11) and 9.2% (n=10). The sensitivity of the assay was 5.0 pg. extraction efficiency was  $88.2 \pm 3.3\%$  (n=24) and the results were corrected for extraction losses.



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## RESULTS

All treated females calved 23 to 31 hours after Treatment (Table 1). There was a correlation between gestation period and time consumed for prostaglandin induced-parturition, because, females with 383 days of gestation delivered after 23 and hours post-injection meanwhile females with 380 and 381 delivered after 31 and 26 hours post-injection respectively (Table 2).

The placenta dropped normally and no evidence of retention or metritis was observed. Moreover, all calves delivered were normal and the body weight ranged between 29.8 - 32.2 kg.

Mean plasma hormone levels are shown in Table 3. Progesterone levels showed a sharp drop 2 hrs after injection and dropped even further 16 hrs later. Estradiol 17-B increased sharply during the same period.

Table 1: Age, Date of mating and Date of Delivery of five she camels injected with prostaglandin F<sub>2α</sub>.

No. of female	Age (years)	Date of mating	Date of delivery	gestation period
503	15	29/11/1988	15/12/89	380 days
519	20	29/11/1988	15/12/89	380 days
520	14	26/11/1988	15/12/89	383 days
530	20	28/11/1988	15/12/89	381 days
538	17	26/11/1988	15/12/89	383 days

Table (2): The time interval between injection of prostaglandin and delivery ( hours).

No. of animal	Time interval in hours	gestation period
503	31 h	380
519	31 h	380
520	24 h	383
530	26 h	381
538	23 h	383

Table. 3: Mean (SEM) plasma concentration of progesterone and Estradiol 17-B before and after prostaglandin F2 $\alpha$  injection.

	Progesterone ng/ml	Oestradiol 17-B (Pg/ml)
(X) n	5	5
sample (1) before PG injection (0.0ohrs)	1.98 $\pm$ 0.3	37.5 $\pm$ 6.5
sample (2) 2 hours after PG injection	0.76 $\pm$ 0.26	44.3 $\pm$ 7.2
Sample (3) during delivery	0.35 $\pm$ 0.12	88.25 $\pm$ 5.4



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### DISCUSSION

In term of time consumed for prostaglandin induced parturition, the preliminary results obtained in this study are being reported for the first time and it appear completely different than those reported by Day (1977), in cow and by Diehl et al.(1979), in swine. Also, there was no evidence of retention of placenta, in she camel, after PG injection but induced parturition in cattle tend to be associated with placental retention as well as a tendency towards reduced calf survival (Wagner, 1980). Therefore, the source of progesterone in the preparturient she camel is susceptible to PG activity. Comparing with other species including cattle (Nancarrow, et al. (1973) and sheep (Goding, 1973), it would be reasonable to assume that the preparturient she camel is dependant upon the corpus luteum as main or major source of progesterone. The source of the rise in oestradiol 17-B observed here is not clear. It could arise from resumed follicular activity stimulated by the removal of progesterone block following PG injection. Alternatively, it could arise from redirection of steroidogenesis (McCracken et al., 1971) at placenta side.

However, more study is required to elucidate the mechanism of parturition and the role of PG in she camel.

### SUMMARY

To examine the effect of prostaglandin F<sub>2</sub>& on induction of parturition in pregnant she camels, 500 microgram of prostaglandin F<sub>2</sub>& (Estrumate; Coopers, England) was injected intramuscularly into five pregnant she camels, at 380-383 days of gestation.



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Parturition occurred in all of them 23 to 31 hours post-injection.

Mean plasma concentrations of progesterone significantly ( $P < 0.01$ ) decreased from 1.97 ng/ml on the day injection to 0.35 ng/ml on the day of parturition. Also a significant ( $P < 0.01$ ) increase in the mean concentration of Estradiol 17-B (88.25 pg/ml compared to 35.5 pg/ml) was noted. The results suggest that prostaglandin has a direct effect on C.L. leading to rapid parturition.

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