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Effect of Damaging Brown Gland (Poll-Gland) on Plasma Blood Testosterone Concentration in Male Camels

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ABSTRACT

Twelve male dromedary camels were used in this experiment. The animals were adjusted into three groups ; damaging Poll-gland (G1), castration (G2) and control (G3). The results of this study indicated that decrease in plasma testosterone and sexual activity occured during the breeding season in those males which were adjusted for damaged poll-gland (G1) and castration (G2) while the control male (G3) showed normal sexual behavioral signs and testosterone surge. This concluded that the damaging poll-gland, which is accompanied by a decrease in plasma testosterone, is likely to be a main cause of sexual activity in male camels.

Key Words: Testosterone, Brown gland, Castration, Camel, Libya.

INTRODUCTION

Little information is so far available especially in connection with the mechanism of the poll-gland (Brown gland). Yagil and Etzion (1980) , Dixit *et al., (*1987) and Agarwal and Khanna, (1990) described that the testosterone levels were measurable during the rutting season, when the poll-gland becomes active and secretes a dark brown material with pungent odor that attracts females. This is accompanied by the production of testosterone (Agarwal and Khanna, 1990). Shareha (1989) and Yagil and Etzion (1980) reported that the poll-gland can be active during the breeding season and then become non-active in non-breeding season.

Due to the contradicting views and scanty information regarding the anatomy and mechanism of poll-gland, this

investigation was carried out to elucidate these points and attempt to offer some information on the poll-gland.

MATERIALS AND METHODS

In this study 12 one humped male camels 3-4 years old were used to investigate the poll-gland (Brown gland) and its relation to other structures which might contribute to the mechanism of distention. The animals were divided during the non-breeding season into three groups (G) four animals each. The poll-gland (Brown gland) was damaged by very hot metallic wire after local anthesthesia in four animals (G1). Four other males (G2) were castrated, while the rest of the males were used as a control group (G3).

The animals were housed at the University farm and fed on concentrates and straw. Animals were in good condition and apparently healthy and had no direct contact with females during the experiment. Camels were examined daily for poll-gland secretions, behavioral signs of rutting, interest in estrous females and mating. Blood was collected from jugular vein of all camels, 15-day intervals before and up to one-year post treatment. Specific radioimmuno assay or Enzymes test (EIA) (Boehringer Monnheim ES700), techniques in each sample measured concentration of Testosterone hormone.

RESULTS

The result of this study were similar to those found by Dixit *et al., (*1987) and Agarwal and Khanna, (1990), but somehow lower than those obtained by Azouz *et al.,* (1990) (2.9 ± 0.19 ng/ml). Size of testes and poll-gland activity were also observed during breeding season, compared to those in non-breeding season. However, testosterone concentration showed immediate decrease in all treated males (damaging poll-gland or castrated). they reached the base line of 0.15-0.1 ng/ml (MVSE = 0.12 ± 0.02 ng/ml), 3 to 4 months after damaging poll-gland or castration (Table 1).

All males in group G3 (control) showed normal behavioral signs in rutting season including aggressive, gurgling sounds, searching for females, extrusion of soft palate and poll-gland secretions, while those signs were not observed in either damaged

poll-gland or castrated male camels. In conclusion it seems that a damaged poll-gland (Brown gland), which is accompanied by decreased plasma concentration of testosterone, is likely to be the main cause of sexual activity in male camels. Therefore, further study of poll-gland mechanism needed to be studied.

Table 1: Testosterone concentration (ng/ml) in male camel blood Plasma of damaged poll-gland, castrated and normal male camel during breeding season.

Months	Damaged poll-gland (G1)	Castrated male (G2)	Control male (G3)
6	0.2 ± 0.09	0.13 ± 0.07	0.16 ± 0.1
7	0.19 ± 0.05	0.1 ± 0.06	0.2 ± 0.07
8	0.76 ± 0.04	0.65 ± 0.05	0.76 ± 0.05
9	0.85 ± 0.1	0.86 ± 0.12	14.96 ± 0.07
10	**1.7 ± 0.1	*1.8 ± 0.12	14.96 ± 0.1
11	0.63 ± 0.3	0.2 ± 0.06	4.5 ± 0.02
12	0.4 ± 0.07	0.16 ± 0.02	5.4 ± 0.13
1	0.2 ± 0.05	0.1 ± 0.02	6.4 ± 0.4
2	± 0.07	0.06 ± 0.02	6.4 ± 0.2
3	± 0.08	0.07 ± 0.01	4.6 ± 0.16
4	0.13 ± 0.05	-	2.1 ± 0.1
5	0.15 ± 0.06	-	0.3 ± 0.2

* Time of castration. ** Time of damaging poll-gland

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