

Ovarian Activity of Dromedary (Single Humped) Camel (*Camelus dromedarius*) in North-Eastern Nigeria

M. S. Yahaya, J. Takahashi*, S. Matsuoka and O. Alaku¹

Department of Animal Science, Obihiro University of Agriculture and Veterinary Medicine
Obihiro, Hokkaido, Japan 080-8555

ABSTRACT : A total of 690 ovaries were collected from 345 camels slaughtered in Maiduguri abattoir, North-Eastern part of Nigeria, to study the influence of season on ovary weight and corpus luteum count in the dromedary (single humped) camel (*Camelus dromedarius*). Right ovary was significantly heavier ($p < 0.01$) and had more follicular fluid than the left. Although corpus luteum count increased gradually throughout the study period, no camel had 3 active corpora lutea and only 53 out of the total number had two. Ovarian activity seem to be higher in the cold dry harmattan season, November/December, than during the warmer post rainy season, September/October. These periods can be exploited by farmers, especially peasants who rely heavily on natural mating, to obtain greater conception rates and reduce the chance of failure during mating. (*Asian-Aus. J. Anim. Sci.* 1999, Vol. 12, No. 6 : 868-870)

Key Words : Ovary Weight, Corpus Luteum, Single Humped Camel, *Camelus dromedarius*, Nigeria

INTRODUCTION

The population of dromedary camels in Nigeria is only about 18,000 (FAO, 1980). About 67% of the estimated population is concentrated in the Sahelian region of North-Eastern Nigeria (Alaku and Mohammed, 1991). Most of this area is sandy and completely inaccessible with even 4-wheel drive cars, but not when camel and horses are used.

Camels, horses, mules and donkeys belong to the group of domestic animals referred to as beasts of burden or pack animals (FAO, 1972; Raynods, 1986). Among these animals, camels appear to be the most versatile, in their contribution to the general economy of any developing country. They are used for transportation, field cultivation, milk production and recreation when they are in good health and condition. They are also sold for cash or slaughter for meat (Alaku and Mohammed, 1991). However, these livestock receive little attention despite their economical importance. In general, more attention is given to the cattle, sheep and goats probably because they have been well studied in the temperate regions where they provide milk, meat and wool.

Recent studies (Dada, 1978; Federal Livestock Department (FLD), 1984) have reported an increase in the slaughter of camels at Kano and Maiduguri abattoirs in the Northern part of Nigeria. On the average more than 3,400 camels were slaughtered yearly in Maiduguri abattoir. Alaku and Mohammed (1991) observed that in 1989 alone about 13% of the

females slaughtered in Maiduguri abattoir were pregnant. This is rather high and it is probable that not all these females had outlived their reproductive lives. In view of their limited number compared to other livestock population in Nigeria, the study of influence of season on ovarian activities should help to increase camel production, especially through artificial insemination.

The present study was, therefore, conducted to investigate the influence of season on ovary weight, follicular fluid weight and corpus luteum count in the dromedary (single humped) camel (*Camelus dromedarius*) in the Sahelian region of North-Eastern Nigeria. It is desirable to advise farmers, especially peasants who rely heavily on natural mating, on the right time to breed their camels for chances of conception.

MATERIALS AND METHODS

A total of 690 (345 right and 345 left) ovaries were collected from a total of 350 dromedary camel slaughtered in Maiduguri abattoir to study the effects of month at slaughter on ovary weight and corpus luteum count. All camels were slaughtered for meat and were brought from Sudano-Sahelian regions of Borno state and its environs. Age of animals was determined by teeth count (Starke and Pretorius, 1955) as no records were available. All camels were mature as the incisor teeth were eight.

Both left and right ovaries were harvested immediately after slaughter that was usually between 4:00 and 7:00 am. local time. They were then immediately transferred to the laboratory for analysis. Weight of ovaries was recorded on torsion balance. Also the follicular fluid weight and corpus luteum count were recorded for every ovary.

* Address reprint request to J. Takahashi. Tel: 81-155-49-5421, Fax: 81-155-49-5421/5462, E-mail: junichi@obihiro.ac.jp.

¹ Department of Animal Science, University of Maiduguri, Borno State, Nigeria.

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Data were evaluated by ANOVA and differences between monthly means were calculated according to Steel and Torrie (1960).

RESULTS

Table 1 shows the seasonal variation in ovary weight and follicular fluid weight in dromedary camel. The average weight for right ovary is 2.39 g and for the left is 1.99 g. The difference (0.40 g) is highly significant ($p < 0.01$). The average right follicular fluid weight is 0.88 g and for the left is 0.22g the difference (0.44 g) is highly significant. Month at slaughtering significantly ($p < 0.01$) influenced ovary weight and follicular fluid weight. Ovary weight was lowest in November and this is more manifest in the left ovaries, while the follicular fluid weight was highest in November and more manifest in the right ovaries. It is possible that the right ovary is more active than the left.

The right ovary had more corpora lutea than the left. There was a gradual increase in corpora lutea count and in the number of camel slaughtered during November/December (figure 1). Out of the 345 camels only 15 % had two active corpora lutea. In October about 3.2% out of 73 camels had non-regressed corpora lutea, while in November about 4.2% out of 272 camels had non-regressed corpora lutea. Overall, about 6% of the 690 ovaries collected had non-regressed corpora lutea.

DISCUSSION

The ovary weights recorded in camels ranged from 1.59 to 2.77 g in the present study. However, in temperate regions, ovary weights in cattle have been reported to be 3 to 4 g (Hafez, 1985). The difference can be explained in part by species differences and also by the fact that these indigenous camels are still to be selected and improved.

Relatively larger ovary weight recorded for the right ovary may be attributed to the fact that the right ovary had a greater corpus luteum count. Hafez (1994) studied the existence of a physiological association between follicle and functional corporal lutea in farm animals and found that follicles in cow and ewe ovaries that contain copora lutea grow faster than follicles on the opposite ovaries without copora lutea. A similar result of higher corpus luteum count in right ovaries was also observed in African sheep (Uda and Yankasa; Yahaya, 1986). It is possible that the right ovary is more active in turns of oogenesis leading to more follicular fluid and corpus luteum formation than the left.

Such an effect may be mediated through differences in local concentrations of progesterone in

Table 1. Seasonal variation in ovary and follicular fluid weight in dromedary (single humped) camel (*Camelus dromedarius*)

Month	Number of Animals	Ovary weight (g)		Follicular fluid weight (g)	
		Left	Right	Left	Right
September	25	2.20 ^a	2.20 ^a	0.10 ^a	0.46 ^a
October	48	2.19 ^a	2.77 ^a	0.16 ^a	0.52 ^a
November	132	1.59 ^b	1.62 ^b	0.18 ^b	1.72 ^b
December	140	1.96 ^{ab}	2.32 ^{ab}	0.45 ^{bc}	0.82 ^{ac}
Mean		1.99	2.39	0.22	0.88
SE		0.14	0.14	0.04	0.11

Means followed by different superscript letters within same column are significantly different ($p < 0.05$)

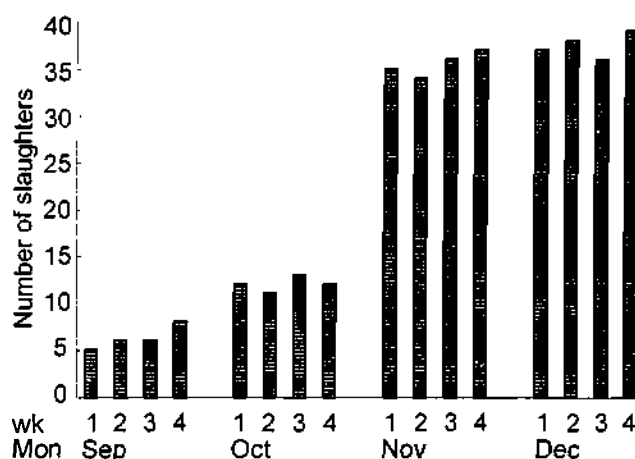


Figure 1. Seasonal changes in number of slaughtered dromedary (single humped) camel (*Camelus dromedarius*) in September/December

the two ovaries (Tomas et al., 1998). Also a greater follicular fluid weight and number of large follicles in ovaries of yankasa and uda ewes were observed in the ovary bearing a corpus luteum (Yahaya and Alaku, 1989). Progesterone may act both systemically and locally to alter time-dependent changes in follicle size, thus making it possible for some follicles to grow while others undergo atresia (Tomas et al., 1998 and Fortune, 1994). The monthly trend of an increase of slaughtering numbers of camels in November/December may be associated with the many types of ceremonies and festivals in these periods e.g. post-farm harvest and Christmas celebrations, end of year and new year festivals and celebrations. It is a common among Christians, Muslims and animists in the regions to offer to sacrifice an animal if a wish is to be fulfilled, apart from the adverse effect of the long dry season (Jabbar, 1998). During these dry periods much of the land becomes bare, covered only by dust and

sand blown from the Sahara desert by the North-East continental harmattan wind. In these periods, as most of the watering holes have dried up, much of the leaf material or browse plants becomes exhausted. Animals in these areas start to consume extremely low nutritive materials such as bark of trees and completely dried wood. Alaku and Maruppa (1983) observed that during these periods farmers sell a good proportion of their flocks to meat dealers in order to avert losses. Wilson and Clarke (1976) have also observed that takeoff from the herds in Sudanese Bagara cattle is similarly determined by such an ecological constraint. Although local breeds of livestock are fertile all the year round, sheep and camels tend to be more fertile in some period than others (Alaku, 1985; Buvanendra and Adu, 1990).

The results obtained from this study indicate that ovarian activities seem to be higher in cold-dry harmattan season, November/December, than during the warmer post rainy season, September/October of the year. It is hoped that the knowledge obtained in the present study will not only give rise to increased camel production in the area, but also go a long way in limiting the number of pregnant animals slaughtered in most abattoirs through faulty pregnancy diagnosis.

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