



Impact of Management on Progesterone Level in She-Camels' Milk in Central Sudan.

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ABSTRACT

The main objective of this study was to investigate the impact of improved management system on camel reproductive potentials, to assess progesterone hormone level in camel milk as pregnancy indicator and to calculate the calving interval days in different husbandry systems. Thirty six of lactating she-camels and three male were selected, the animals were divided into three groups, and the first group was managed in intensive system. All animals were kept in experimental farm and fed individually with concentrates and roughages. The second group was managed in a semi-intensive system; camels were grazed and supplemented with concentrate. The third group was served as a control under traditional system in this system animals graze grasses, agriculture's residues and browse the shrubs. Milk samples were collected at monthly intervals beginning at 4th month until the animals were confirmed pregnant. Milk samples were assayed for progesterone concentrations. Progesterone level in milk was also used to monitor ovarian activity during service period and early pregnancy diagnosis. The results showed progesterone concentration attained a higher value in intensive and semi-intensive systems as compared with traditional system. In intensive system the lowest value of progesterone. Progesterone level within traditional system recorded the lowest value in the fifth month postpartum and the highest value in eighteen month, lowest value under semi-intensive was recorded in the fifth month and the highest value was in thirteen month postpartum. Farming system has great effect on progesterone level in extensive and semi-extensive system.

INTRODUCTION

Camels are an important livestock species in the arid and semi-arid zones in Asia and Africa. Camels contribute significantly to the livelihood of the pastoralists and agro-pastoralists living in the fragile environments of the deserts and semi deserts of Asia and Africa. The traditional grazing regions of camels around the world were impacted by climate change (1). This was especially true for camel keepers in Sudan, home to 4.8 million camels (2) ranking the country worldwide second only to Somalia. Most camels are raised within pastoral systems in the western Kordofan and Darfur and eastern regions of the country, they are well adapted to the local environmental conditions and can survive in zones which are prohibitive for other livestock species. The camels in Sudan are owned and raised by nomadic different tribes. Camel herders migrate north in the wet season and south during the dry season searching for the good pastures. Camel production in Sudan reared under four management systems include traditional nomadic system, transhumance or semi-nomadic system, sedentary or semi-sedentary system and the intensive system (3); (4); (5). Traditional nomadic systems found in Sennar State and the type of camel is *Nefidi* camel, the herd owners kept the animals in these are for milk and meat. Under traditional management the camel productive and reproductive traits are low. This may be due to herd dynamics and lack of sufficient feed and water (6).

The main constraints facing camel production under traditional system that camels lose their base environments and desire of the herders to settlement

around towns and many old cultural values, the traditional role of the camel is disappearing so new and improved methods of camel raising must be initiated that will enable man to utilize the natural ability of the camel to produce milk, meat, fibre, hides and energy in areas where other animals cannot produce, or produce only with difficulty. The main Objective of this study was to investigate the impact of improved management system on camel reproductive potentials, to assess progesterone hormone level in camel milk as pregnancy indicator and to calculate the calving interval days in different husbandry systems.

MATERIAL AND METHODS

Study areas

Sennar State.

This study was carried out in three different areas in central Sudan (Sennar State).

Animal and managements

Thirty six of lactating she-camels and three mature male for mating were selected, the animals were divided into three equal groups, the first group was managed in intensive system, all animals were kept during the study in experimental farm and fed individually daily with 5Kg of concentrate and 25 Kg of roughages. The second group was managed in a semi-intensive system with in near site of the first group, she-camels were grazed and

browed during the day they selected the available plants and shrubs, all animals were herded during the night in pens and supplement individually daily with 5Kg of concentrate. The third group was served as a control under traditional system (as nomadic practice) in this system animals graze grasses, agriculture's residues and browse the shrubs.

Determination of Progesterone level

From all experimental animals, milk samples (10 mL) were collected into tubes containing sodium-azide at monthly intervals beginning at 4th month from parturition and every month until the animal was confirmed pregnant by non-return to oestrus. Milk samples were centrifuged to remove fat and then stored until assayed for progesterone. Concentrations of progesterone in the defatted milk were measured using the solid-phase RIA system supplied by the Joint (7). Also a set of detailed structured questionnaires were used to collect information from camel owners about herd structure and constraints of camel production in the areas.

Statistical analysis

Data of monthly progesterone concentrations' were analyzed using a least square model with husbandry amendment fixed effects and the random error using Statistical Analytical System (8). Least significant difference (LSD) was used to detect statistical significance between means.

RESULTS AND DISCUSSION

The result showed that the progesterone concentration attained a higher value in intensive and semi-intensive systems as compared with the traditional system (**Fig.(1)**). In intensive system the lowest value of the progesterone was 2.2 ± 0.4 in the 5th month and highest value was 6.8 ± 0.4 in the 14th months postpartum. The progesterone level within traditional system was recorded the lowest value. The farming system has effect on the progesterone hormone concentration in she-camels under extensive and semi-extensive system, these results are agree with (9), Eisa (10) and Eisa, *et al*

(5).

Progesterone concentration for she-camels managed in intensive system was showed in figure 2. The level of it began more than 2 ng/ml milk and increased slowly till the 9th month and there were no big variation between the individual animals, in the 13th month the level reached 4 ng/ml for camel5 and continued till reached highest level (7ng/ml) for she-camel 11 in the 16th month. In the 19th, after 19th month the level decreased quickly for most the she .

Progesterone and Estrogen are two important female sex steroid hormones, whose rhythmical secretion determines the reproductive behavior, oestrus, ovulation, pregnancy and parturition. The pattern of secretion of these hormones has been well-documented in cattle, buffalo, sheep, goat, and mare but is less well understood in the camel (11).

In figure 3, progesterone levels of she-camels in semi-intensive system were shown, it was ranged from 0.9 to 2 ng/ml and camel 2 was recorded highest value. Most were recorded the highest value (6 ng/ml) also the clear variation between the individuals camels was appeared during the peak. In general the progesterone decreased slowly in the 14th month till reached the lowest value 3.8 . The results of the present study were similar with findings of (6) who reported that in pregnant camels at latter half of gestation: The average concentration of Progesterone was relatively higher (5.87 to 12.07 ng/ml) between 23rd to 32nd weeks of gestation than at later stages (2.88 to 5.09 ng/ml).

Figure 4 show the concentration of progesterone for the camels reared under traditional system. In pregnant females progesterone concentration began less than 0.5 ng/ ml in the 5th months for most individuals camels and increased significantly clearly in the 12th month in most individuals camels reached 2 ng/ml . In pregnant females progesterone concentration increased significantly ($P < 0.05$) in 16th month of pregnancy and reached the higher value above 4.5 ng/ml for she camel 12, the variation between individuals females was appeared in 16th months, the clear variation between she –camels continued till the 20th months . These results are disagree with (6) and this may be to nutrition variation of the grasses. The values observed in present study resembled all those reported previously in camel studies (12) and (13).

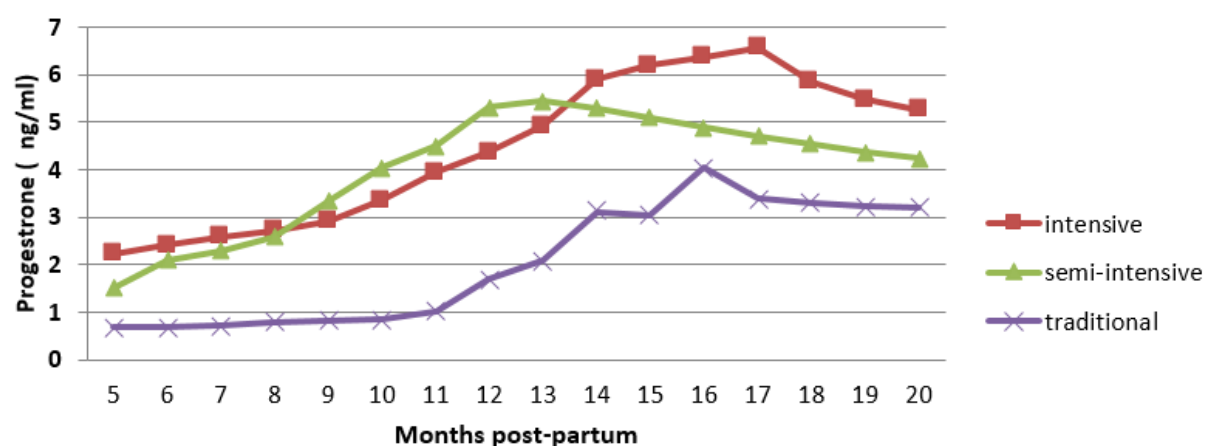


Figure 1. Impact of farming system on camel Progesterone level

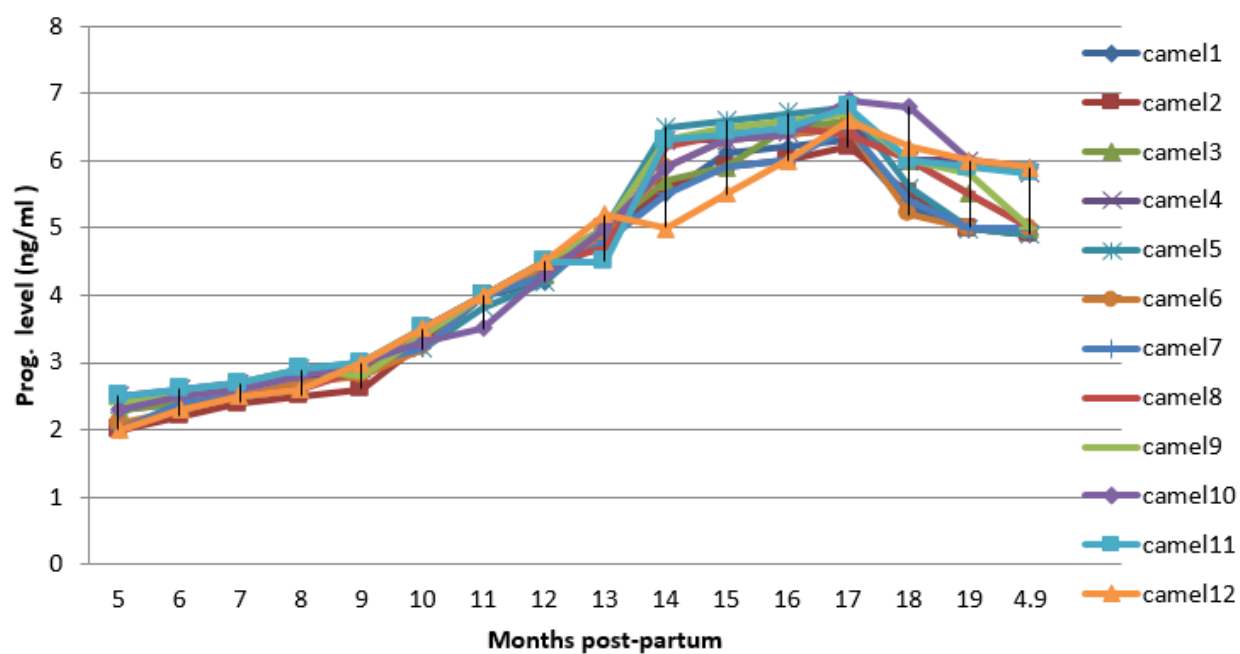


Figure 2. Progesterone concentration of individual camels under intensive system

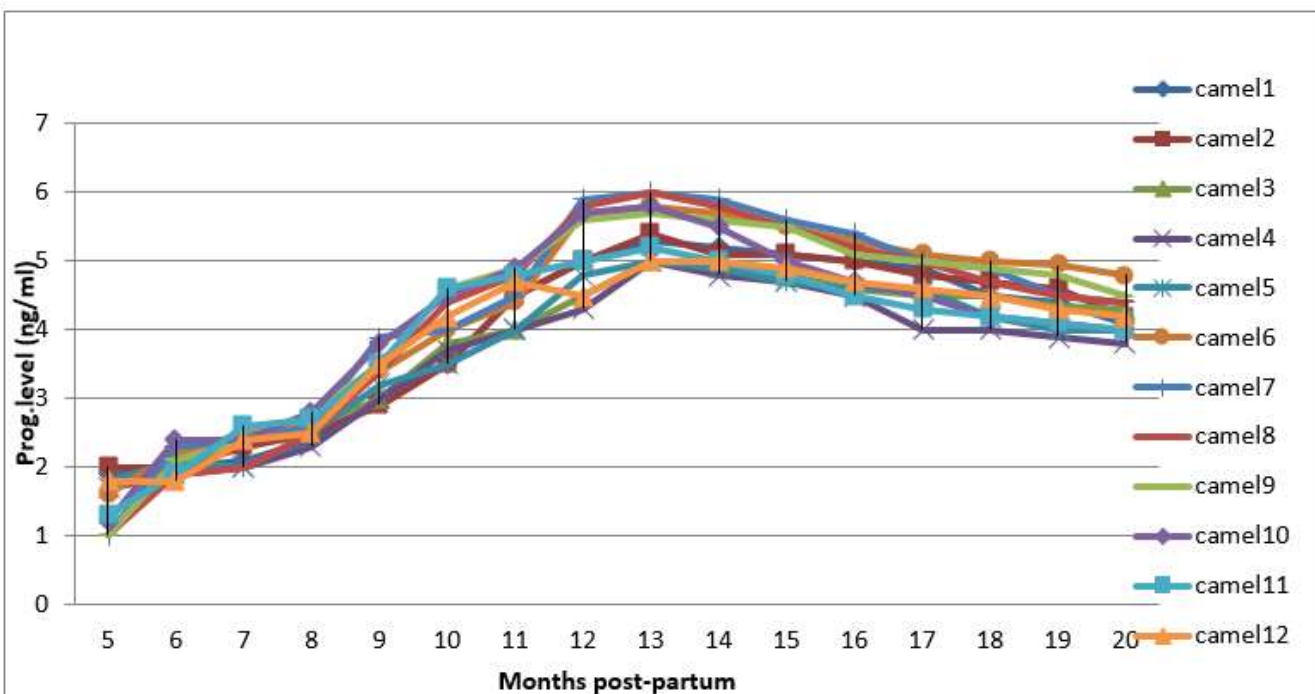


Figure 3. Progesterone concentration of individual camels under semi-intensive system

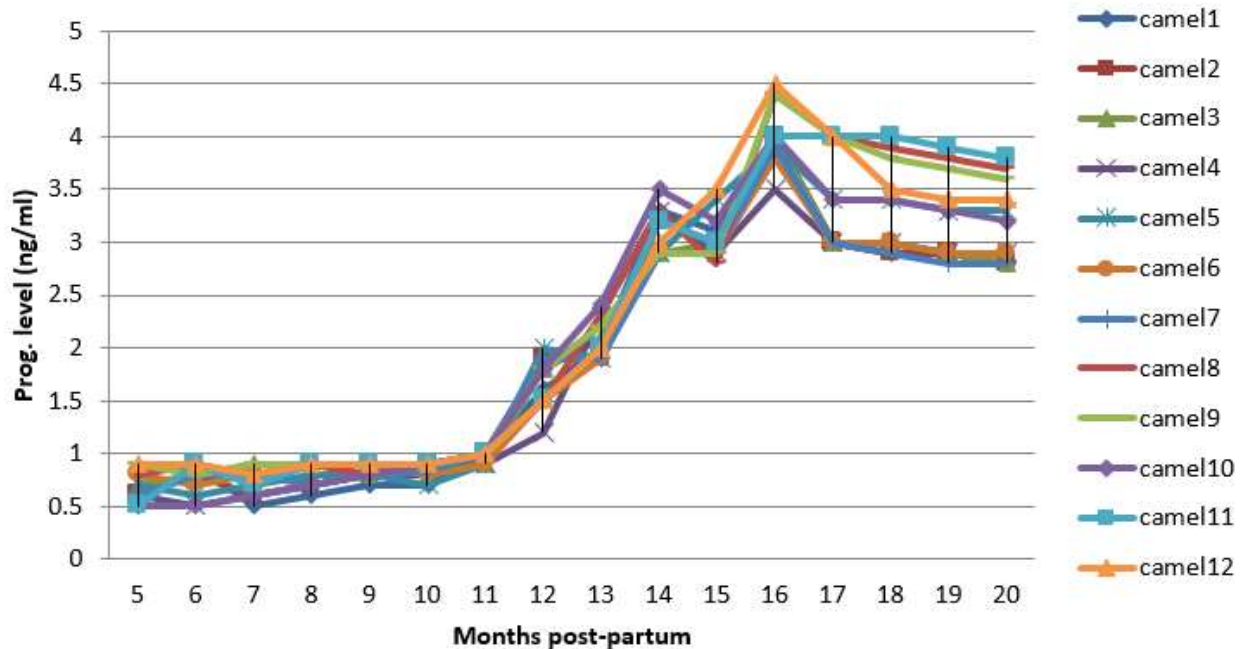


Figure 4. Progesterone concentration of individual camels under traditional system

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