THE INFLUENCE OF TRYPANOSOMOSIS INFECTION AND TREATMENT WITH CYMELARSAN ON THE PROGESTERONE PROFILE IN FEMALE CAMELS “CAMELUS DROMEDARIES”
(With 1 Table)

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SUMMARY

This study was conducted to investigate the influence of trypanosomosis infection, and treatment with Cymelarsan, (the new arsenical compound) and the serum progesterone profile in the female-camel infected or non-infected by T. evansi. Blood samples were collected for 35 days at 5 days intervals from 16 female camels. Eight of them were already naturally infected with T. evansi strain and they were divided into 2 infected groups, while the other animals were clinically healthy and they were also divided into 2 non-infected groups, Cymelarsan was administered intramuscularly at 0.25-mg/kg body weight for one of infected and non-infected groups. Progesterone level was measured before and after treatments using radioimmunoassay (RIA). The two treated groups showed un-observable increase in progesterone level while the infected non-infected treated groups showed observable significant decrease.

INTRODUCTION

In Sudan the camel “Camelus dromedarius “ plays a very important role in the national income, and constitutes a major commodity in the livestock foreign trade (Schwartz, 1992). Trypanosomosis is far the most important protozoan of camels (Wilson, 1984). Abortion, premature births and an inability to feed the young all greatly reduce reproductive potential in affected herds (Yagil, 1982). In camels, progesterone concentration in the blood increase greatly only after coitus (Yagil, 1982), as there is no spontaneous ovulation. Abdel Rahim and ElNazer (1987) reported that the progesterone level was more than 5 ng/ml in pregnant status where as in the non-pregnant animals concentration fell below 1 ng/ml. Cymelarsan injection (0.5%) Rhone-Merieux Lyon-France, is an arsenical drug used for treatment of trypanosomosis in Africa, especially that caused by Trypanosoma evansi, (Raynaud, et al 1989). Buion (1990) declared that cymelarsan can be used in animals in poor condition or in pregnant females with no adverse systemic effects to investigate the changes that could occur, if any, in progesterone level in female camels, healthy and infected with T. evansi following the administration of Cymelarsan. The goal of this work was directed to investigate this relationship in female camels.

MATERIALS AND METHODS

16 female camels (Camelus dromedarius) were used in this study. They were aged 8-12 years old and weighed 400+20 kg. They were divided into 4 main groups:

1- Resembles the control group contained 4, uninfected, untreated animals.
2- 4 uninfected treated animals.
3- 4 infected untreated animals.
4- 4 infected treated animals.

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All the camels in the group No. (4) were recovered to their normal condition after treatment with Cymelarsan, and *T. evansi* was not detected in their blood after 24 hrs after injection. The recommended dose of Cymelarsan (0.25 mg/kg .W.) was used by intramuscular injection (I/M) in the third part of the neck. Blood samples were collected from the jugular veins at 5 days intervals for 35 days (after injection of the drug) for progesterone assay, using the Radioimmunoassay (RIA) technique, (FAO/IAEA, RIA, 1993).

**RESULTS and DISCUSSION**

Very little is known about the reproductive endocrinology of the camel “CAMELUS DROMEDARIUS” (Homeida *et al.*, 1988) and the available data of the reproductive endocrinology of the camels are mainly obtained from morphological studies of the ovaries and uteri collected from the slaughterhouse (Arthur *et al.*, 1986) or blood progesterone concentration estimated during pregnancy (Elias *et al.*, 1984). It was reported that the breeding season for camel in sudan was found to be from December to July. The active reproductive cycle of camels is confined to the water and cooler months of the year when food and water rare readily available (Yagil, 1985).

The level of the progesterone in the serum of all groups determined and presented in Table (1), the progesterone level was significantly (P<0.05) high and significantly low (P<0.05) in group 3 (infected but non-treated animals) and group (4), respectively when compared with the level of control group. Throughout the course of the experiment there was significant difference in the level of progesterone in all group except group 3, where the serum progesterone level was significantly low (P<0.05) at day 5 and 35 compared to first day. However, slight increase in the progesterone level was observed in the infected and treated animals (group 4) through the 35 days, while it is non significantly decrease at day 15 when compared with the level of day 1 (Table 1). The inconsistency in the pattern of progesterone release and variation in duration of cycles within the animals were also reported by Abdel Rahim (1989).

In the present work, all the samples were collected during the breeding season, and the serum progesterone level was determined in all the 16 female camels (Table 1). The serum progesterone in all groups was fluctuated within the normal level (<1 ng/ml) as described by Yagil, (1985) and Homeida *et al.* (1991). The differences in the progesterone level may be attributed to the seasonal variation in camel’s ovarian activity, the camel showed only follicular development during the breeding season and ovulates in response to coitus.

Abebe and Eley (1992) reported that the possibility of primary hypothalamic-pituitary dysfunction during Trypanosomosis has been indicated by hormonal imbalance related to reproductive and adrenal steroid hormonal pathways.

The decrease in the serum progesterone level in the infected non-treated she-camels in the present work might be due to primary hypothalamic-pituitary dysfunction during trypanosome infection. After the injection of Cymelarsan in the non-infected animals (group 2), no change in the fluctuation of serum progesterone level was observed, while in the infected treated animal (group 4) the fluctuation of serum progesterone level was found to be regular and this might indicate that Cymelarsan has an effect to regulated the serum progesterone level as an organized cycle, as shown in Table (1). With the limited number of observations obtained in the present study on the effect of cymelarsan in female *T. evansi*-infected camels in difficult to illustrate such a relationship between trypanosomosis infection, Cymelarsan treatment and progesterone profile in she camels. However, further systematic studies are required to know the changes that may occur in the CNS due to the injection of Cymelarsan and/or infection by *T. evansi* strain.

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REFERENCES


Table (1). Effect of Trypanosomosis and Cymelarsan treatment on serum progesterone level in female camels
(Mean of 4 animals) (Mean ± S.E.M).

<table>
<thead>
<tr>
<th>Days</th>
<th>1</th>
<th>5</th>
<th>15</th>
<th>25</th>
<th>35</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group no. (1)</td>
<td>0.37 ±0.05 (^a)</td>
<td>0.47 ± 0.02</td>
<td>0.19 ± 0.05</td>
<td>0.41 ± 0.09</td>
<td>0.34 ± 0.10</td>
</tr>
<tr>
<td>Group no. (2)</td>
<td>0.37 ±0.07 (^a)</td>
<td>0.43 ± 0.12</td>
<td>0.25 ± 0.04</td>
<td>0.32 ± 0.10</td>
<td>0.36 ± 0.04</td>
</tr>
<tr>
<td>Group no. (3)</td>
<td>0.82 ± 0.08 (^b)</td>
<td>0.32 ± 0.06 (^s)</td>
<td>0.59 ± 0.20</td>
<td>0.50 ± 0.20</td>
<td>0.30 ± 0.07 (^s)</td>
</tr>
<tr>
<td>Group no. (4)</td>
<td>0.13 ± 0.03 (^c)</td>
<td>0.18 ± 0.03 (^s)</td>
<td>0.19 ± 0.08</td>
<td>0.18 ± 0.04</td>
<td>0.17 ± 0.04</td>
</tr>
</tbody>
</table>

Means on the first column, having different superscripts are significantly (P<0.05) different.

S = significant change at (P<0.05) compared to level at day 1 in the same row.