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Efficacy of Trypanocidal Drugs on Experimentally Induced Trypanosomiasis in Racing Camels

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ABSTRACT

A study was conducted to assess the efficacy of three trypanocidal drugs, viz. melarosamine, diminazine and quinapyramine, in the treatment of experimental *Trypanosoma evansi* infection. Sixteen camels were divided into four groups (four camels per group). Groups I, II and III were treated with melarosamine, diminazine and quinapyramine, respectively. Group IV served as non-infected and non-treated control. Within each group I, II and III, one camel was kept as infected non-treated control. Cure rates of 66.66%, 66.66% and 33.33% were recorded, for melarosamine, diminazine and quinapyramine treated camels, respectively. Some hematological and blood biochemistry parameters were also recorded on control and trypanosome infected camels. The mean Packed Cell Volume (PCV) of infected animals dropped from 29±3 to 21.35±6.5 before treatment. The mean value of neutrophils, eosinophils, basophils, lymphocytes and monocytes were 32.7%, 1.80%, 1.06%, 62.4% and 1.30%, respectively. Value of mean total protein was 8.92g/dl while Albumin and Globulin were 2.62g/dl and 6.20 g/dl respectively.

INTRODUCTION

Trypanosomiasis in camels is not only an important health hazard but in the racing camel it can also impair significantly racing capability, even in the very early stage of disease. A lot of research has been published but more information is needed in the field of chemotherapy and diagnosis. Moreover, a complex situation arises when post-medication relapses occur with commonly available drugs. The aim of the study was to assess the efficacy of three trypanocidal drugs for the treatment and/or prophylaxis of trypanosomiasis in the camels.

MATERIALS AND METHODS

A total of 16 animals of both sexes, aged about two years apparently healthy and free from trypanosomiasis were selected for this study. These animals were confined in an experimental area with pest control treatment for termites, mange, mites and flies.

They were divided into four groups. Each group comprised four camels. One group was kept as negative control while the remaining three groups were inoculated with *T. evansi* subcutaneously using a dose of 0.02 ml containing 5 million trypanosomes.

Once the animals were confirmed with active infection, three camels in each group were treated with three different drugs. Group I received Cymelarsan [Rhino Merieux, containing (aminoethic) 4-melaminophenylarsine dihydrochloride], group II received Trypan, a slow release, long acting preparation (Chamberley and Partner, containing diminazine-di-aceturate, procaine, HCl and antipyrine) and group III was given Triquin (Wockhard Veterinary Limited, containing quinapyramine sulphate and quinapyramine chloride). Group IV served as non-infected and non-treated throughout the experimental period. Weekly blood examination and clinical signs were noted. Blood was tested twice a week for

the detection of trypanosomes. For the uniformity of experiment, all blood sampling was done in the morning by jugular phlebotomy. Packed Cell Volume (PCV), Total Protein (TP), Albumin (Alb) and Globulin were estimated (Coles 1989). Differential leukocyte count (Coles 1989) were performed and clinical signs were recorded. Camels plasma were tested for antibodies (Rani and Luckin 1984) in the infected and normal camels at various intervals during the studied period. Camels were kept for six months to see if the disease relapsed.

RESULTS AND DISCUSSION

After five to six days of infection, animals showed signs of anorexia. Evaluation of buffy-coat and blood examination was performed in all three groups and were found positive for this parasite.

Cymelarsan was injected after confirming the infection. The camel which was positive control died 10 days after infection. The two infected and treated camels recovered while one infected and treated camel became very weak, anorexic and was unable to rise, therefore the animal was euthanized. Schillinger and Rothcher (1986) stated that they have cured experimentally infected camels by giving S/C injection of Cymelarsan at dose rate 0.3-0.6 mg/kg b.wt.. Almost similar results have been demonstrated in the present study. Melarosamine has been reported to have a high efficiency against *T. evansi* infection in dromedary camels (Olaho-Mukani et al. 1995). Trypan was given to 3 infected camels, animals showed recovery based on the clinical and buffy-coat examination. But after 2 1/2 months one camel relapsed. Other two infected and treated camels recovered. The infected non-treated camel survived but remained sick throughout the experiment (Table 1). Petrovsbili and Khamev (1977) on a group of 25 camels infected with trypanosomiasis found that 5 mg/kg i.m. diminazine was effective in eliminating the infection and caused no adverse effect. Similar observations have been recorded by Raisinghani and Lodha (1980). Three positive camels were given Triquin. The infected and non-treated camel died after 24 days showing emaciation and weakness. Of the three treated animals one died after 34 days, while in one of the treated camel disease relapsed, showing signs of fever and anorexia. The camel was unable to rise and was euthanized. Remaining one camel recovered (Table 1).

Table 1. Treatment trials for various groups.

Croup and No. of Animal	Drugs and Dose Admtnistered	Mortality in Treater Animals No	%	Recovery Rate %
Group I - 4 3 treated	Cymelarsan 0.25 mg/kg b.wt.	1	33.33	66.66
Group II - 4 3 treated	Trypan 3.5 mg/kg b.wt.	1 One relapsed	33.33	66.66
Group III - 4 3 teated	Triquin 0.025 ml/kg b.wt.	2 One relapsed	66.66	33.33
Group IV - 4 (Non-affectedand Non-medicated)	Control	Nil	Nil	

Finelle (1973) has reported that the drug was effective against trypanosomiasis but also

relapses occurring in some animals. This non-infected control group remained normal throughout the experiment (Table 1) as observed by hematochemical, buffy-coat test, and antibodies.

The blood of the experimental animals was examined for PCV, DLC, Total Protein Albumin and Globulin before and after infection and then after therapy (Table 2). The values of non-infected group remained within the normal range. After inducing the infection, the mean PCV value was estimated 21.35%. Hematological studies carried out on experimental Indian camels affected with trypanosomiasis over a period of one year (Raisinghani et al. 1980), showed reduction in haemoglobin and PCV values. They also observed changes in the differential leukocyte count. An increase in total protein and globulin while decrease in albumin have been reported (Goal and Sing 1969; Bold et al. 1980; Jaguar et al. 1973).

Table 2. Hetnatochemical values of normal, trypanosomiasis infected and treated camels.

Parameter	Nomal (Group IV)	Infected (Group I,II,III)	Recovered (Group I,II,III)
Packed Cell Vol.%	29±3	21.35±6.5	26.5±5
Neutrophils %	52±5	32.7±3	38.3±6.5
Eosinophils %	1.5±1	1.8±1	6.5±6
Basophils %	1.0±1.5	1.06±0.5	1.7±1
Lymphocytes %	45±4	62.4±4	50.8±4.5
Monocytes %	0.5±1	1.3±1	2.7±1.5
Total Protein g/dl	6.5±1.5	8.92±2	6.0±3
Albumin g/dl	3.5±2	2.62±1.5	3.0±2.3
Globulin g/dl	2.0±4	6.2±1.5	2.5±3.5

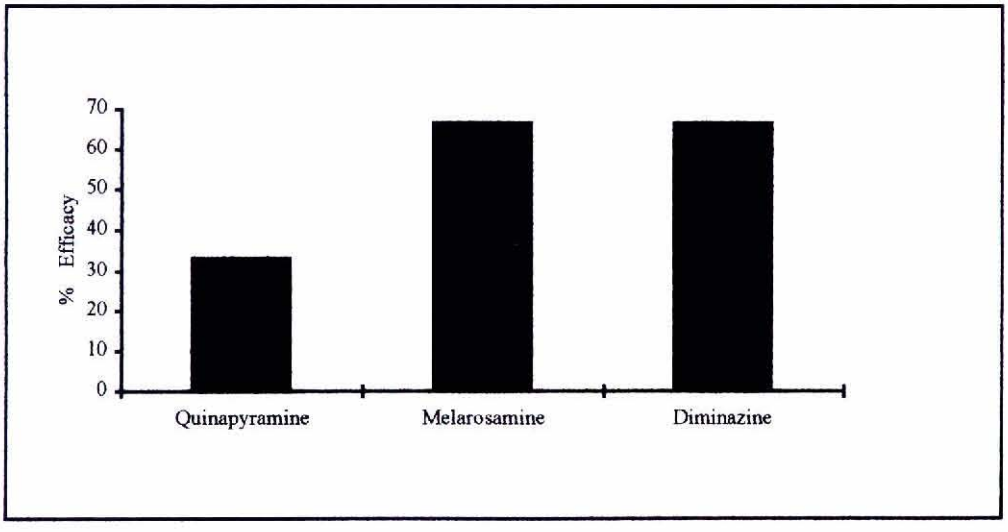

Figure 1. Efficacy of trypanocidal drugs on experimentally induced trypanosomiasis in racing camels.

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