

**STUDIES ON THE INCIDENCE OF TRYPANOSOMOSIS IN
SEDENTARY CATTLE AT
UMBENEIN & ABU NAAMA AREAS
(SINGA AREA, SINNAR STATE, SUDAN)**

By

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ABSTRACT:

Trypanosomes were diagnosed using the microhaematocrit centrifugation technique. *Trypanosoma vivax* was diagnosed in cattle throughout the year, the infection rates were highest in October and November. In this study the incidence rates were variable ranged between 00.00% and 2.05 at Abu Naama and ranged between 00.00% and 1.00% at Umbenein.

المخلص:

نوع المتقيات التي تم الكشف عليها بواسطة الاختبار الترسبي بالأنايب الشعيرية كانت من نوع *Trypanosoma vivax*. وقد تم الكشف عن هذا النوع طوال العام. تراوحت نسبة الإصابة أثناء الدراسة بين صفر % و 2,05% في أبو نعامة بينما في أم بفين تراوحت بين صفر % و 1,5%.

INTRODUCTION:

Animal trypanosomosis is of economic importance in the Sudan. It does not only affect the distribution of cattle, but also the distribution and even habits of the principal tribes (1). In Bahar ElGazal and Equatoria states, the disease is so sever that cattle are not kept in tsetse areas. However, it is in the central region outside the tsetse fly belt, animal trypanosomosis main incidence, usually in the cattle of the nomadic tribes of the central Sudan (The Baggara in Kordofan

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and Darfur states, Kennana, Rufaa, Seliem of the Blue and White Nile states. These nomads trek their animals from the tsetse free open grass plains into the fly-infested Savannah woodland for dry season grazing where their cattle become infected with trypanosomes.

Were natural infection of trypanosomosis in humans appears strictly associated with tsetse, animal trypanosomes: *T.vivax*, *T. congolense* and *T. brucei* are transmitted mechanically by blood-sucking flies. This occurs during the rains when cattle have returned for the wet season grazing in central Sudan. Thus a wide zone of disease transmission, reaching as far north as Khartoum, was established.

Among the infection of cattle, the types of distribution noted by various authors also obtained in the Sudan. In cattle recently exposed to direct infection in the tsetse belt *T. congolense*, is predominant, but as distance from tsetse area increases so does the proportion of infections due to *T.vivax* (2). This presumably is an effect of mechanical transmission acting with much ease on *T.vivax* than on *T.congolense*.

In this paper incidence of trypanosomosis is reported sedentary cattle at Singa area (Umbenein and Abu Naama, Sennar State, Sudan).

MATERIALS AND METHODS:

The study was conducted from April to May at Umbenein and Abu Naama about 12 to 50 km South of Singa, the capital town of Sennar state, central Sudan. The geography, climate and vegetation off the area of the study were described by Abdellah (3).

EXPERIMENTAL ANIMALS:

About 200 and 300 head of cattle were used at UmBenein and Abu Naama, respectively. The majority of cattle were of the Kenana breed, but a few were crosses of Butana X Kenana and Kenana x Friesian breeds. These mixed breeds constituted about 2% of the total animals examined. In both stations most cattle were milking cows with a few heifers, bulls and calves. No attempt was made to classify these animals into different breeds, age groups or sex.

CHANGES IN SERUM CONSTITUENTS**DIPPING:**

Table 1 summarized the effect of various levels of deltamethrin dip on the concentration of inorganic phosphate, sodium, potassium, manganese and copper in the serum of Bovans-type chicks. No significant changes were observed in the serum concentration of total lipid, calcium, zinc and magnesium of test chicks. Slight increase ($P<0.05$) detected in the serum concentration of phosphorus and potassium and decreases ($P<0.05$) in serum sodium in chicks of groups 2,3 and 4 and increases ($P<0.02$) in serum copper concentration compared to control birds and decreases ($P<0.05$) in serum manganese in groups 3 and 4.

FEEDING:

Changes in the concentration of serum total lipid, inorganic phosphate, calcium, magnesium, sodium, potassium, zinc, manganese and copper in the serum of Bovans-type chicks fed various levels of dietary deltamethrin are given in table 2. There were significant increases ($P<0.05$) in the concentrations of calcium and zinc and decrease ($P<0.05$) in potassium and total lipid concentrations in chicks in group 6 and group 7. No significant changes in serum phosphorus, sodium manganese, or copper concentrations were detected in the test birds. During the recovery period, serum copper concentrations were significantly decreased ($P<0.01$) and these of zinc, sodium, calcium and magnesium, were increased ($P<0.05$) in the chicks in group 6, 7 and 8. No significant changes were observed in total lipid, phosphorus, potassium and manganese. No changes observed in control group during the feeding and recovery period.

Table1: Changes in some serum constituents of birds dipped in various concentrations of deltamethrin (M±SD).

Group	Phosphorus mg/100ml	Sodium mg/100ml	Potassium mg/100ml	Manganese ug/100ml	Copper ug/100ml
1(Control)	4.34±0.13	293.5±4.6	28.6±2.33	52.5±7.5	70±5.5
2(0.0025%)	5.3±0.2*	289.6±1.1*	19.6±4.2*	55±10 NS	115±11.5**
3(0.05%)	5.9±0.17*	285.2±1.3*	47.3±7.3*	30±10*	120±6.0**
4(1%)	5.5±0.2NS	286±1.6*	50±8.7*	40±5*	130±12.0**

NS - Not significant * - $P<0.05$ ** - $P<0.02$ M±SD - mean ± standard deviation

Table (2) Monthly Incidence rates of Trypanosomosis at Abu Naama

Months	No. of animals examine	No. of positive	Incidence Rate (%)
May	300	00.0	00.0
June	300	1	0.3
July	299	1	0.3
August	298	1	0.3
September	297	1	0.3
October	296	4	1.35
November	292	6	2.05
December	286	2	0.69
January	284	3	1
February	281	1	0.3
March	280	2	0.3
April	279	1	0.3
Mean incidence	per annum	$\bar{x} \pm SE$ 2.09±1.64	$\bar{x} \pm SO$ 0.65±0.59

DISCUSSION

Trypanosomosis is continuously reported from most parts of the Sudan (5,6,7,4,8,9,10,11). In this study the incidence rates were variable ranged between 00.00% and 2.05% at Abu Naama and ranged between 00.00% and 01.00% at UmBenein. This agrees with Hall *et al* (1983).

Possible source for trypanosomosis infection within the herds are sheep and goats (12). It was observed that sheep and goats may act as a reservoir of *T.congolense* and *T.vivax*. Sheep and goats share common pasture with herds under investigation in the study area.

The description of the trypanosomosis in the area of the study appears to offer a logical explanation of the findings and observations, but it is suitable to consider alternative sources of infection, namely, the presence of low tsetse fly population density. (13) Stated that "On the African continent there is no clear evidence of nagana trypanosomosis in absence of influence of tsetse" (4)

undermined the role of tabanids as mechanical transmitters of trypanosomosis.

Evidence indicates that the study area is far away from the tsetse area. (14). The intensification of land use and animal husbandry practice in the study area destroyed the biotopes suitable for tsetse and improved conditions for tabanids.

For control of trypanosomosis in the study area, it is suggested using of trypanocidal drugs seasonally at the beginning of the rainy season (Rushash) and also occasionally to treat positive cases, since frequent application leads to selection of drug resistant Trypanosome spp

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