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SOLUBLE ANTIGEN OF *T. EVANSI* IN BLOOD SERUM OF INFECTED ANIMALS

Trypanosoma evansi is a hæmoprotozoa affecting many animal species like cattle, buffalo, horse, dog and mouse. The disease caused by *T. evansi* is commonly called *Surra* in Hindi and is naturally transmitted by arthropod vectors. Several methods are reported for demonstrating the antigen-antibody reactions in trypanosomiasis.[2,8,9] Soluble protozoal antigens in the blood serum of the affected host have been demonstrated in experimental babesiosis[7] and in African trypanosomiasis.[3,6]

This preliminary report is on the serologic evidence of a trypanosome-soluble antigen in the blood serum of camel and buffalo suffering from the natural infection (*Surra*).

The trypanosomes were collected from acutely affected animal as described by Gill,[1] and homogenate prepared according to Seed.[5] Rabbits were immunized by injecting 4 ml. dose of the above homogenate by subcutaneous route at 4–5-day interval on five occasions. Bleeding of the rabbits was done by cardiac puncture. Hyperimmune serum was preserved at 4° C. after adding sodium azide in the final dilution of 1 : 1000.

The sera of *Surra*-affected animals was also collected aseptically and preserved at 4° C. by adding sodium azide as above. The procedure of Pande and Pathak[4] was used in the gel diffusion test.

The reaction, between the sera of the naturally infected camel or buffalo showing parasætemia and antitrypanosome rabbit serum, in gel was usually marked by formation of precipitin band (Fig. 1). No precipitin line was observed between the sera of these affected animals and the normal rabbit serum.

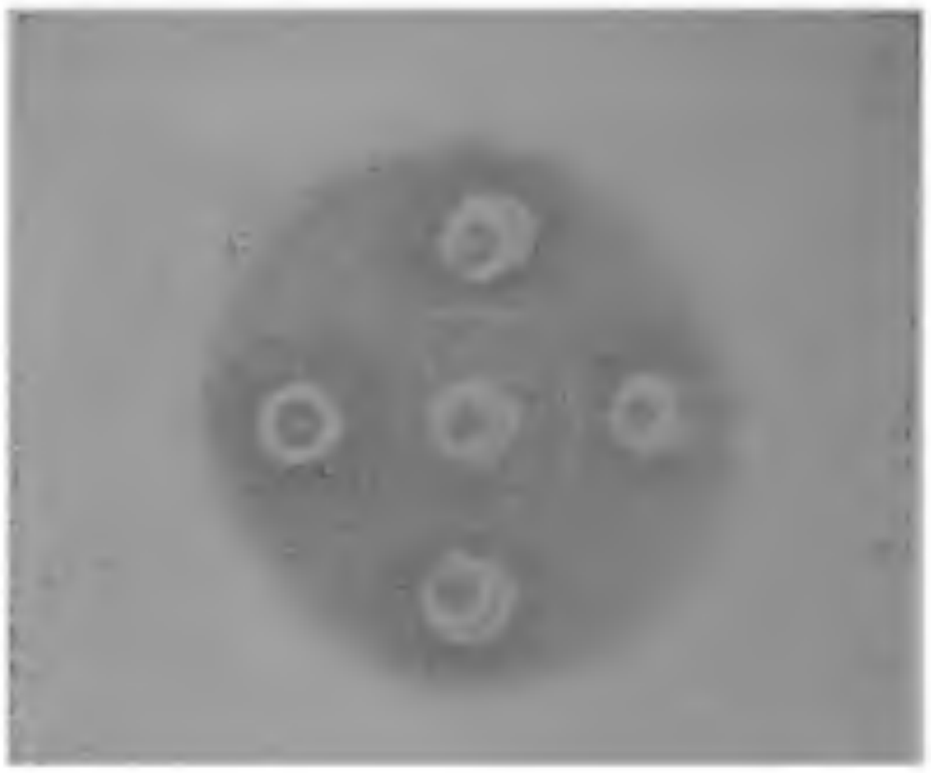

FIG. 1. Showing bands of precipitin in gel. The central cup contains the anti-trypanosome hyperimmune serum and peripheral cups sera from camel and buffalo affected with trypanosomiasis (*Surra*).

During the course of these studies with gel reactions, precipitin bands were also observed occasionally in between the cups containing sera samples from different trypanosome-affected or carrier animals. Such reactions indicate the presence of a diffusible trypanosome precipitinogen and specific precipitin antibody in the blood of animals having trypanosomiasis (*Surra*) of a varying duration.

Similar soluble antigen has been reported in equinebabesiosis.[5,7] The earlier workers studying *Babesia* infections have suggested that production of the antigen in detectable quantities is dependent on a certain stage of the growth and developmental cycle of the parasite.[5] Sibinovic *et al.*[7] have further speculated the similarity between the soluble antigens of *Babesia* and some African trypanosomes and that they also possess the ability to stimulate production of immune antibody in infected animals. The role of such soluble antigens (in protozoan infection) in the pathogenesis of the disease *vis-a-vis* host-parasite relationship is not clear at the moment and needs further investigation.

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A LABORATORY TECHNIQUE FOR MASS REARING OF THE TOBACCO CATERPILLAR *SPODOPTERA LITTORALIS* (BOISD.) *PRODENIA LITTURA* (F.) (NOCTUIDAE : LEPIDOPTERA) ON SYNTHETIC DIET

ARTIFICIAL diets for a number of Lepidopteran insects have been developed by various workers.[1] An attempt was made to develop a synthetic diet for *Spodoptera littoralis* (Boisd.) that will facilitate rearing of this insect all through the year in the laboratory.

The composition and various ingredients used for preparing the diet are given below :

Soaked peas (*Pisum sativum* L.) 50 g. ; Yeast tablet (Alembic) 2 g. ; Agar 300 mg. ; Ascorbic acid 500 mg. ; Calcium pantothenate 150 mg. ; Nicotinic acid 100 mg. ; Folic acid 50 mg. ; Pyridoxin HCl 50 mg. ; β-Sitosterol (Sigma grade) 50 mg. ; Methyl paraben (Sigma grade) 50 mg. ; Formalin 40% 10 drops ; Water 80 ml.

To prepare the diet, agar was placed in a beaker containing 50 ml. of water and boiled to dissolve the agar. The soaked seeds, after removal of the seedcoat, were weighed and put into a glass homogenizer and blended in 30 ml. of water with other ingredients. The agar solution was poured into the food mixture with constant stirring. A small quantity of this semi-solid food was poured into a test-tube of $7\frac{1}{2} \times 2\frac{1}{2}$ cm. which has been previously sterilized by heating in an air oven, and set aside to cool under the fan.

Freshly hatched larvæ obtained from a single egg mass were introduced into each tube at the rate of 10 per tube and the tubes were plugged with sterile cotton plugs. Three or more tubes were held together and kept inverted for the first few days as described by Nachiappan.[2] At the end of the 5th day, the larvæ were separated and kept at the rate of two per tube. They were subsequently separated on the 10th day and kept individually in each tube, till they pupated. During these growing periods the tubes were kept horizontally. Fresh food was supplemented once in five days at the time of separating the larvæ as the food had been eaten by them.

The control larvæ were maintained on castor leaf in small jars as described by Eldefrawi *et al.*[4] The rearing of control and test larvæ was carried out at 85° F (± 2) in a cabinet wherein sufficient quantity of water was kept to maintain the temperature throughout the rearing period. The cabinet lid was kept partially open to allow free circulation of air inside the cabinet.

The results of observations on the development, growth of larvæ and pupæ and the fecundity of adults are summarised in Table I.

TABLE I

Effect of synthetic diet on the development of S. littoralis

Food	No. of larvæ in test	Percentage of survival	Mean developmental periods in days			Mean weight in mg.				Mean No. of eggs per female
			Larva	Pupa	Total	Full-grown larva	Pupa	Adult		
								Female	Male	
Castor leaf ..	50	30	14·44	13·00	27·44	880	278	303	199	381·2
Synthetic diet ..	50	92	14·59	12·13	26·72	920	518	483	227	452·6

The data show that though there is no great difference in larval period and pupal period of larvæ fed on the synthetic diet, synthetic diet has enhanced not only the weight of various stages of insects but also increased the fecundity of adults as compared to that of natural food. No difference in hatching of eggs of moths reared on natural food and moths reared on the synthetic diet was observed. The increased mortality in the insect reared on natural food is due to contamination by certain pathogens.

No fungal growth was observed on the diet kept continuously for 5 days. This may