EFFECTS OF ISOMETAMIDIUM CHLORIDE (SAMORIN) AND DIMINAZENE ACETURATE (BERENIL) ON THE METACYCLIC TRYPANOSOMA (TRYPANOZOON) BRUCEI BRUCEI IN THE TSETSE FLY GLOSSINA MORSITANS MORSITANS WEST. 1950.

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ABSTRACT

The curative and prophylactic values of isometamidium chloride (samorin) and diminazene aceturate (berenil), on the bloodstream trypanosomes in domestic animals have been reported by many workers. The animals treated are cured and or protected from further reinfection by infected tsetse flies. The investigations reported here were carried out to clarify the effect of samorin and berenil on metacyclic trypanosomes in tsetse flies that feed on drug-treated animals.

Teneral Glossina morsitans morsitans under 36 hours old were allowed to have their first blood meal from mice infected with Trypanosoma brucei brucei (strain EATRO 1969) at the first peak of parasitaemia. From day 10 post infective meal onwards, the infected flies were isolated by the salivary probe method and ability to transmit the trypanosomes to clean mice.

Mice were weighed, and by subcutaneous injection the appropriate concentrations of samorin and berenil were administered in the abdomen. Six concentrations for samorin, namely, 0.25, 0.5, 1.0, 10, 100 and 160 mg/Kg and one of berenil at 7 mg/Kg were investigated.

One to three hours after treatment, the isolated infected flies were allowed to feed on the drug-treated mice. None of the doses investigated was toxic to the tsetse flies or the mice.

The saliva from the flies was collected before and 48 hours after the drug-treated blood meal. The number of parasites in all saliva collected before the flies fed on the drug-treated mice were 400 and above. Out of 122 flies used, only one (0.8%) fly had no parasites in the saliva after feeding on the drug-treated mice. The fly also failed to transmit the infection to clean mice and when dissected, the salivary glands and the proboscis had no parasites but the midgut was heavily infected. Nineteen (15.5%) tsetse flies had reduced parasites in the saliva (under 100 parasites per salivary drop). In one fly out of the 19 flies only 8 trypanosomes were observed in the whole saliva 96 hours after the drug-treated meal.

Of the 122 flies, 46 (37.8%) had morphologically defective parasites in the saliva. The defects were moderate karyolysis of the nuclei and degeneration of the metacyclic trypanosomes for samorin at 1 and 10 mg/Kg. Berenil at 7 mg/Kg and samorin at 100 and 160 mg/Kg caused marked karyolysis of the nuclei resulting in degeneration, granulation, fragmentation and clumping together of the metacyclics. Severe cases of defects were observed for samorin at 160 mg/Kg where the parasites were convoluted and indistinguishable.

The number of defective parasites in the saliva collected before and after the flies fed on the drug-

-treated mice were counted. Using statistical analysis, it was shown that the mean difference in the defective parasites caused before and after treatment was significant for samorin at 1 mg/Kg and above and berenil at 7 mg/Kg.

The morphological defects and reduction in the number of parasites in saliva described above did not impair the flies concerned from transmitting the parasites cyclically.