# APPLICATION OF POLYMERASE CHAIN REACTION (PCR) AND PARASITOLOGICAL TECHNIQUES IN DETECTING TRYPANOSOME SPECIES IN TSETSE FLIES IN SELECTED AREAS OF KIBWEZI DIVISION.

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**ABSTRACT**

Animal trypanosomiasis is an infection that affects many domestic animals but more so cattle. It is caused by trypanosomes, the most common being *Trypanosoma congolense, Trypanosoma vivax, Trypanosoma brucei* which are transmitted cyclically by tsetse flies. This disease is economically very important with annual losses in the order of $3 billion (Budd,1999). Further, research findings show that, tsetse flies occupy 45 million square miles of Africa, making much of the area impractical for habitation.

Mtito Andei Division of Kibwezi District in Makueni county has geographical conditions that favour the proliferation of tsetse flies making trypanosomiasis economically important in the area. In light of this, there is need for effective and sustainable control of the disease. This, however, can only be achieved through accurate identification of the problem; which entails, details on the parasite species present in the area and their vectors. The findings of this study shall provide this important epidemiological information thereby, providing baseline for effective control.

Trypanosome species in Mtito Andei division were detected in their vectors using parasitological and Polymerase Chain Reaction (PCR) techniques. The flies were trapped using baited biconical trap in selected areas of the region. The bait used was acetone and fermented oxen urine. The trapped flies were sorted into sex and species and dissected to separate the organs i.e the labrum, Hypopharynx, mid-gut & salivary glands. These were observed for trypanosomes by microscopy.

The tsetse species identified were *Glossina pallidipes* and *Glossina longipennis. Glossina pallipides* were more abundant than *Glossina longipennis,* even. The organs were packed separately then transported to a laboratory where they were prepared for PCR. The PCR was done using species specific primers enabling accurate identification of the trypanosomes present.

PCR results indicated that, tsetse flies in Mtito Andei division are infected with trypanosomes. The species detected included, *Trypanosoma congolense savannah (Tcs), Trypanosoma congolense forest (Tcf) and Trypanosoma vivax (Tv)*. There were 5 mixed infections. Of these; two were double infections involving (1) *Tcs* and *Tv* (2) *Tcf* and *Tv*. The other three, were triple infections involving *Tcs, Tv* and *Tcf*. This by inference shows that animal trypanosomiasis is prevalent in the area, hence need for sustainable control.