EVOLUTION AND DIAGNOSTIC UTILITY OF MAJOR SURFACE PROTEASES FROM *Trypanosoma vivax, T. brucei brucei* and *T. congolense*

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Tsetse-transmitted trypanosomiasis is a disease unique to Africa, affecting both humans and animals. This disease occurs in about 10 million km^2 in 37 sub-Saharan countries corresponding approximately to one-third of Africa's total land area, and threatens an estimated 50 million people and 48 million cattle. The estimated annual losses in cattle production alone are in the range of 1.0-1.2 billion dollars. Definitive diagnosis is based on demonstration of parasites in blood or tissues. However, this is complicated by the fact that available diagnostic tests do not distinguish the infective species. These protozoan parasites are infamous for their ability to evade the immune responses by periodically switching their major variant surface glycoprotein (VSG) in a phenomenon called antigenic variation a mechanism that enables these organisms to thrive in the face of the immune defences. The complexity of the trypanosome parasite's antigenic repertoire has made development of a diagnostics tools based on the VSG coat unlikely hence research is now focused on identifying invariant trypanosome components as potential targets for interrupting infection or infection-mediated disease such as the Major Surface Protease (MSP). The MSP have been identified in *Leishmania* contributes to their ability to foil the mammalian immune system. MSP-like genes have been identified in African trypanosomes whose genome contains gene families encoding homologues of the abundant MSP. The MSP was cloned, expressed and the evolution of the MSP variants evaluated with the aim of determining their conservation across *T. congolense*, *T. brucei* and *T. vivax* species and ultimately their possible use as diagnostic targets for trypanosomiasis. Conserved domains were obtained within the MSP that may form useful target sites for the development of a tool for detecting *T. congolense*, *T. brucei* and *T. vivax*.

Keywords: Trypanosomes; Major Surface Proteases; Protein expression; Phylogenetics.