THE ABILITY OF *THEILERIA PARVA* SECRETION SIGNAL SEQUENCES TO RESTORE SECRETION OF THE INVERTASE ENZYME BY *SACCHAROMYCES CEREVISIAE*

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Cell surface and secreted proteins play an essential role in biological processes of the cell by mediating interaction of the cell and its external environment. This class of molecules are targets for host immune responses and are therefore of interest as candidate diagnostic and vaccine antigens. It is assumed that secreted and secretory molecules are directed into the classical secretory pathway by a N-terminal peptide or signal sequence. Application of a secretion signal trap (SST) method has allowed the identification of proteins with both cleaved and non-cleaved signal sequences and proteins that are targeted to intracellular organelles.
This work was intended to assess the functional ability of *T. parva* secretion signal sequences in a *S. cerevisiae* SST system. This system is based on the ability of a DNA insert to complement the signal sequence deleted gene encoding invertase, an extracellular yeast enzyme essential for the metabolism of sucrose and raffinose.

Predicted signal sequences of several characterized proteins of *T. parva* were sub-cloned into the yeast expression vector and their ability to restore invertase secretion was examined by growing transformed yeast on rich medium containing raffinose. Results obtained indicated that the parasite gene sequences have the capacity to direct invertase secretion. Signal sequences from membrane proteins and proteins targeted to intracellular organelles of *T. parva* were able to restore secretion of invertase by yeast. However, some results indicated that some parasite signal sequences did not have the capacity to restore the secretion of invertase although the parasite genes had been predicted to contain cleaved signal sequences.