

TRIOSEPHOSPHATE ISOMERASE: A NOVEL TARGET FOR TICK CONTROL

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The tick *Rhipicephalus (Boophilus) microplus* is an hematophagous ectoparasite that causes considerable economic losses to cattle breeding. They also transmits some pathogens to humans and other animals. Triosephosphate isomerase participates in glycolysis and gluconeogenesis by catalyzing the interconversion between glyceraldehyde 3-phosphate and dihydroxyacetone phosphate. Cysteine-reactive agents such as 5,5'-dithio-bis(2-nitrobenzoic acid) (DTNB) and methylmethane thiosulfonate (MMTS) were used in order to test if the regions close to cysteine residues of recombinant TIM from *B. microplus* (BmTIM) are potential targets to affect enzyme structure or activity. The intrinsic fluorescence of BmTIM was accompanied in the presence or absence of these agents. The results demonstrate that fluorescence intensity decreased in the presence of different concentration of both chemicals. BmTIM activity was also assayed in the presence of different H₂O₂ concentrations in order to evaluate its susceptibility to aminoacids oxidation. The activity was reduced in a dose dependent manner. Additionally, BmTIM activity was assayed in ovary, fat body and gut from fully engorged females, in the presence of monoclonal antibodies raised against BmTIM (mAb1G5 and mAb2D4). Significant enzyme activity reduction on these organs was detected when tests were performed with mAb2D4 and mAb1G5. These antibodies were also efficient to reduce a tick embryo cell line (BME26) viability in culture medium. Taken together these results suggest that BmTIM is a good target for drug design and candidate to vaccine, as a possible alternative method to control *R. microplus*.

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