

**BRASILIENSIN: A NOVEL INTESTINAL THROMBIN INHIBITOR FROM
TRITOMA BRASILIENSIS (HEMIPTERA: REDUVIIDAE) WHICH PLAYS AN
IMPORTANT ROLE IN BLOOD INTAKE**

Araujo, R.N.¹, Campos, I.T.N.², Tanaka, A.S.², Santos, A.¹, Gontijo, N.F.¹, Lehane,
M.J.³, Pereira, M.H.¹

¹ICB-UFMG, Belo Horizonte, MG, Brazil. ²UNIFESP-EPM, São Paulo, SP, Brazil.

³LSTM, Liverpool, L3 5 QA, U.K.

Virtually every hematophagous invertebrate studied to date produces an inhibitor of coagulation. Among these, thrombin inhibitors have frequently been isolated. To study the thrombin inhibitor from *T. brasiliensis* and its biological significance, we sequenced the corresponding gene and evaluated its biological function. The *T. brasiliensis* intestinal thrombin inhibitor, termed brasiliensin, was sequenced and gene knockdown (RNAi) was induced by two injections of 15 µg of dsRNA. Forty-eight hours after the second injection, bugs from each group were fed on hamsters. PCR results showed that injections of brasiliensin dsRNA reduced expression of the gene by about 71%. The reduction in gene expression was confirmed by the thrombin inhibitory activity assay and the citrated plasma coagulation time assay which showed activity reductions of ~18 and ~3.5 fold, respectively. Knockdown nymphs ingested about 39% less blood than controls. Fourth instar nymphs were allowed to ingest feeding-solution alone or containing 15U of thrombin prior to blood feeding. 55% less blood was ingested in nymphs previously fed thrombin. The results suggest that anticoagulant activity in the midgut is an important determinant of the amount of blood taken from the host. Supported by: Fapemig, CNPq, CAPES and Wellcome Trust.