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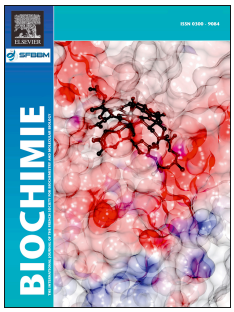

Characterization of a novel cystatin type 2 from *Rhipicephalus microplus* midgut

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Abstract

The *Rhipicephalus (Boophilus) microplus* is an exclusive bovine ectoparasite responsible for the transmission of pathogens that decrease meat, leather and milk productions. Cattle vaccination is an alternative to control tick infestations, but the discovery of potential antigens is still a challenge for researchers. Recently, our group performed a midgut transcriptome of engorged *R. microplus* tick, and out of 800 ESTs sequences one cystatin-coding sequence was identified and named Rmcystatin-4. In order to understand the physiological role of Rmcystatin-4, the aim of this work was the expression, purification and functional characterization of a novel type 2 cystatin from the tick *R. microplus*. Rmcystatin-4 gene expression was identified mostly in tick midgut suggesting its possible role in blood digestion control. Our data showed that rRmcystatin-4 was successfully expressed in active form using *Pichia pastoris* system and the purified inhibitor presented high selectivity to BmCl-1 (Ki = 0.046 nM). Moreover, rRmcystatin-4 was able to impaired BmCl-1 activity towards bovine hemoglobin.