IGG-DEGRADING ACTIVITY OF *RHIPICEPHALUS (BOOPHILUS) MICROPLUS* MIDGUT

Teixeira, V. O. N.; Estrela, A. B., Ceolato, J. C.; Seixas, A.; Termignoni, C.
Centro de Biotecnologia and Departamento de Bioquímica. UFRGS, Porto Alegre, Brazil.

The cattle tick *Riphicephalus (Boophilus) microplus* a blood-feeding ectoparasite, is a major restraint to milk and beef production in many countries of the world. It is known that 2% of the total host IgG ingested by the tick passes through the midgut wall and remain active in the hemolymph, which explains the efficacy of vaccination with hidden antigens. Now, we report on the presence of IgG-degrading activity (at neutral and acid pH) in the crude extracts of partially engorged female midgut. IgG digestion products were analyzed by SDS-PAGE. Midgut extracts were fractionated in ion exchange chromatography (HiTrapQ). Two protein peaks presented activity upon IgG at neutral pH and a third one was active at both neutral and acidic pH. This fraction was further purified (Superose12 and MonoQ resins) and an IgG-degrading enzyme active only in acidic pH was isolated. This activity is inhibited by E-64 and it is not inhibited by pepstatine, confirming it is a cysteine endopeptidase. These results help to explain why only a minor percentage of the ingested IgG enters the hemolymph. According, to improve the efficacy of tick vaccines it may be necessary to add this enzyme in the antigen cocktail in order to improve IgG stability on the midgut.