Biochemical Characterization of Serine Proteases Produced by *Staphylococcus xylosus* Isolated from Intestinal Tract of Velvetbean Caterpillar

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The use of genes encoding inhibitors of digestive enzymes to obtain plants resistant against the attack of insects, production of potent peptide inhibitors of proteases, production of synthetic peptides or peptide mimetic are considered as promising strategies to control insect pests. In order for this to occur, however, will need a combination of inhibitors that cover the full spectrum of the insect to intestinal proteases. Insect physiology, biochemistry of digestion and local microbiota should therefore be considered. A number of intestinal proteolytic bacteria have been recently isolated from the velvetbean caterpillar capable produce proteases. The present study aimed at characterizing serine protease from *Staphylococcus xylosus* isolated from the intestinal tract of *A. gemmatalis* using the substrates L-TAME. There was high serine protease activity in pH 8.5 and temperature of 30 ºC. The K_{MAPP} and $V_{MÁXAPP}$ 48,5 µM were 0,56 µM.s^{-1} respectively. Inhibitors of serine protease TLCK (irreversible) and Aprotinina (competitive) significantly decreased bacterial serine protease activity. Combining the effect of the inhibitor of metal protease EDTA with the effect of calcium ions were obtained by serine protease calcium-dependent. Pespstatine A, an aspartyl protease inhibitor and E-64 Inibidor of cysteine proteases will not affect serine proteases bacterial. Thus, the kinetic characterization and effects of protease inhibitors on the activity of proteases produced by *Staphylococcus xylosus* led to the conclusion that bacteria synthesize and release enzymes of the family serine proteases into the intestinal lumen of *A. gemmatalis*.

Keywords: serine proteases, *Staphylococcus xylosus*, *Anticarsia gemmatalis*

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