AN UNUSUAL OLIGOMERIC CYSTEINE PEPTIDASE IN THE LATEX OF *Thevetia peruviana*.

Ramos, M.V.¹; Cruz, W. T.¹; Silva, M.Z.R.¹; Souza, P. F. N.¹; Alencar, L.M.R.²; Sousa, J. S.²; Freitas, C. D. T.¹

¹Departamento de Bioquímica e Biologia Molecular, Universidade Federal do Ceará, CE, Brasil. ²Departamento de Física, Universidade Federal do Ceará, CE, Brasil.

**INTRODUCTION:** A wide diversity of molecules has been identified in laticifer fluids, and the most well studied are proteins involved in plant defense, such as peptidases, peptidase inhibitors, chitinases and anti-oxidative enzymes. Peptidases have been recognized as the majority proteins in latex. In this study, a cysteine peptidase was purified from the latex of *Thevetia peruviana*. It demonstrated uncommon structural properties as compared to other latex cysteine peptidases. **OBJECTIVE:** To characterize the oligomeric structure of a latex protein. **MATERIAL AND METHODS:** The peptidase was purified by a single chromatographic step involving gel filtration on a Superdex-75 (10/300 GL) column. The N-terminal amino acid sequence was determined using an automated peptide sequencer performing Edman’s degradation. The proteolytic activity was measured using the substrates azocasein, BANA and BapNA at different temperature and pH conditions. Different types of peptidase inhibitors were also tested to determine the mechanistic nature of the peptidase. The molecular mass was estimated by two-dimensional electrophoresis and mass spectrometry. The three-dimensional images of the protein were acquired by atomic force microscopy. The activity of the protein on spore germination of *Fusarium solani* was also studied. **RESULTS AND DISCUSSION:** Peruvianin-I was inhibited by E-64 and iodoacetamide and exhibited best activity at pH 5.0-6.0 and temperature and 25-37 °C. Peruvianin-I is a 120 kDa molecule assembled by six unique subunits (20 KDa). The N-terminal amino acid sequence was similar to that of germin-like proteins. High-resolution images from atomic force microscopy indicated the possible hexameric structure of peruvianin-I, which is organized as a trimer of dimers that form a central channel, very similar to barley and wheat germins. Peruvianin-I did not exhibit antifungal effects. **CONCLUSION:** Peruvianin-I is an uncommon oligomeric cysteine peptidase with structural characteristics closer to the germin proteins.

**Keywords:** Germin, Laticifer, Protease.

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