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Detect and partially purify trypsin inhibitor from Aesculus hippocastanum (Indian chestnut) seeds

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ABSTRACT

Introduction: Plants have several mechanisms of defense against phytopathogens, being one of them formation of defense proteins, such as protease inhibitors. Objectives: The objective of this work was to detect and partially purify trypsin inhibitor from Aesculus hippocastanum (Indian chestnut) seeds. Methodology: The A. hippocastanum seed powder was submitted to saline extraction in 0.15 M NaCl (10% w/v). The extract was evaluated for trypsin inhibitor activity and protein concentration and to chromatography on DEAE-Sephadex column equilibrated with 0.1 M Tris-HCl pH 8.0 and eluted with the same buffer containing 1.0 M NaCl. The obtained peaks were dialyzed and evaluated for trypsin inhibitory activity. Results and Discussion: Saline extract (4 mg/mL of protein) showed a specific trypsin inhibitory activity (STIA) of 149.57 U/mg. The pool of proteins adsorbed on DEAE-Sephadex matrix showed high STIA (1280.31 U/mg), corresponding to a purification factor of 8.5. Conclusion: Seeds of A. hippocastanum possess a trypsin inhibitor that was partially purified by ion exchange chromatography.

Keywords: Indian chestnut; trypsin inhibitor; protein purification.

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