

First Insights into the Diversity and Functional Properties of Chitinases of the Latex of *Calotropis procera*

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INTRODUCTION. Chitinases (EC 3.2.1.14) found in the latex of *Calotropis procera* (Ait) R. Br. were studied. **OBJECTIVES.** To investigate diversity and functional aspects of laticifer chitinases. **METHODOLOGY.** The proteins were homogeneously obtained after two ion exchange chromatography steps performed on Sepharose fast flow (pH 5.0) and Mono-Q (pH 8.0), respectively. The proteins were individually identified in fifteen spots on 2D-electrophoresis gels with isoelectric point ranging of 4.5 to 6.5 and molecular masses extending of 27 to 30 kDa. The identification of the proteins in gel was confirmed by Mass Spectrometry analyses of the corresponding tryptic digests. **RESULTS.** Positive reaction for Schiff's reactive suggested the proteins were glycosylated. The chitinases exhibited high catalytic activity towards to colloidal chitin at pH 5.0 and this activity underwent decay in the presence of increasing amounts of reducing agent DTT. Spore germination and mycelial growth of two phytopathogenic fungi (*Fusarium oxysporum* and *Colletotrichum gloeosporioides*) were only marginally inhibited by the chitinases, but differently affected. This suggested a complex relationship may exist between the specificity of the proteins towards the fungi species. The chitinases showed potent insecticidal activity against the Bruchidae *Callosobruchus maculatus*, drastically reducing survival, larval weight and adult emergence. **CONCLUSION.** It is concluded that closely related chitinases are present in the latex of *Calotropis procera* and the first experimental evidences suggest these proteins are most efficiently involved in defense strategies against insects rather than fungi.

Key words: laticifer proteins, plant defense
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