Defensins, Plant Antimicrobial Peptides with Inhibitory Activity against *Leishmania amazonensis*

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Plants produce antimicrobial peptides (AMPs) against their pathogens, either expressed constitutively or induced after pathogen perception. Most of these peptides are polycationic and amphipathic and cause cell lysis upon interaction with the phospholipid matrix of the plasma membrane. Plant defensins are small, basic AMPs of 45–54 amino acids comprised in a three-dimensional structure formed by three anti-parallel β-strands and one α-helix. The aim of this work was the survey the antiparasitic activity of plant defensin PvD1 from *Phaseolus vulgaris* against *Leishmania amazonensis*. The PvD1 defensin was extracted from *P. vulgaris* seeds in phosphate buffer, pH 8.0, as described by Terras et al. (1992). A DEAE-Sepharose, equilibrated with 20 mM Tris–HCl, pH 8.0, was initially utilized for the separation of peptides. The basic fraction obtained showed the presence of one unique band in SDS–Tricine gel electrophoresis with molecular mass of approximately 6 kDa. The purification of this peptide was confirmed after reverse-phase chromatography in C2/C18 column by HPLC, and the peptide (PvD1) submitted to N-terminal sequencing and the comparative analysis in databanks revealed high similarity with sequences of different defensins of plants (Games et al., 2008). The antiparasitic study showed that PvD1 defensin inhibits the *L. amazonensis* promastigotes proliferation 89 and 96.5 %, at 300 and 600 μg.mL⁻¹, respectively. PvD1 defensin also caused permeabilization of the plasma membrane of *L. amazonensis* promastigotes. The intracellular accumulation of PvD1 was also demonstrated by immunofluorescence through the coupling of the defensin with fluorescein isothiocyanate. Our results may foster the use of plant antimicrobial compounds as a new source of antiparasitic agents.

Keywords: Defensin, antimicrobial peptide, *Leishmania amazonensis*, inhibition

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