

Identification of Cyclotides with Antimicrobial Activity in Cerrado Plants

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In last few years, several studies have been developed in order to screen novel tools for bacteria infection control. One of the main classical strategies is the discovery of antimicrobial proteins in different plant sources. Among those proteins, there are plant cyclotides, which consists of a circular cysteine-rich group of peptides, with molecular masses ranging from 2.8 to 3.7kDa. Plant cyclotides were previously reported in Rubiaceae and Violaceae families, showing diverse biological functions. In summary, this report aims to isolate and characterize cyclic peptides from Cerrado plants. Leaves of *Palicourea rigida* and *Cecropia pachystachya*, were grounded and extracted with Dichloromethane/Methanol (1:1). Bioassays were performed showing inhibitory activity toward *Proteus* sp. (55% and 90%), *Salmonella* sp. (61% and 47%) and *Staphylococcus aureus* (48% and 78%) respectively for *P. rigida* and *C. pachystachya*. Active extracts were applied onto a reversed phase C₁₈ column, followed a linear gradient of acetonitrile (0-100%) with a flow rate of 2mL.min⁻¹. Fractions of *P. rigida* eluted with 4% and 27% acetonitrile and peaks from *C. pachystachya* eluted with 5% showed antimicrobial activity. Molecular mass analysis was performed in Tris-Tricine gel, to *P. rigida* showed a band at 14.2kDa, and one band in 3.4kDa. The bands will be submitted to MALDI TOF-TOF sequencing, lead in us to class confirmation. In summary, these data indicate that cyclic peptides from native Brazillian plants could be utilized, in a near future, as biotechnological tools to reduce human bacterial infections.

Keywords: Cyclotides, *Palicourea rigida*, antimicrobial peptides, *Cecropia pachystachya*.

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