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Prospecting for Circular Miniproteins in the Leaves of Pombalia atropurpurea.

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Circular miniproteins, also known as cyclotides, are a class of cyclic peptides found in plant families such as Violaceae, Rubiaceae, and Fabaceae. Their distinctive structure, with a circular backbone of 28 to 37 amino acid residues and a head-to-tail cyclization, is stabilized by an arrangement of three disulfide bonds that form the Cyclic Cystine Knot (CCK). This unique configuration gives them remarkable stability and resistance to proteolytic degradation. With over 720 structures cataloged in the Cybase database, cyclotides have been the focus of research due to their role in plant defense and their varied biological activities, including antimicrobial, anti-HIV, and antitumor effects. Aiming to fill a gap in the national literature, our research group is currently investigating these compounds in native Brazilian plant species. Cyclotides from leaves of *Pombalia atropurpurea* (Violaceae), were extracted, defatted, and lyophilized, resulting in the crude extract, which was submitted to SPE-C18 cartridges and eluted with a mixture of 20%, 80%, and 100% buffer B (90% CH_3CN, 0.1% CF_3COOH) in an aqueous solution of 0.1% CF_3COOH. The 80% fraction showed rich concentration in cyclotides, which were isolated and identified. 3 cyclotides were isolated and 3 are new in the literature.

Keywords: *Circular miniproteins, cyclotides, cyclic peptides, Pombalia atropurpurea, Violaceae.*