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Título	Spatial Distribution and Biochemical Characterization of Serine Peptidase Inhibitors in the Venom of the Brazilian Sea Anemone Anthopleura cascaia Using Mass Spectrometry Imaging
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Resumo	Sea anemones are known to produce a diverse array of toxins with different cysteine-rich peptide scaffolds in their venoms. The serine peptidase inhibitors, specifically Kunitz inhibitors, are an important toxin family that is believed to function as defensive peptides, as well as prevent proteolysis of other secreted anemone toxins. In this study, we isolated three serine peptidase inhibitors named Anthopleura cascaia peptide inhibitors I, II, and III (ACPI-I, ACPI-II, and ACPI-III) from the venom of the endemic Brazilian sea anemone A. cascaia. The venom was fractionated using RP-HPLC, and the inhibitory activity of these fractions against trypsin was determined and found to range from 59% to 93%. The spatial distribution of the anemone peptides throughout A. cascaia was observed using mass spectrometry imaging. The inhibitory peptides were found to be present in the tentacles, pedal disc, and mesenterial filaments. We suggest that the three inhibitors observed during this study belong to the venom Kunitz toxin family on the basis of their similarity to PI-actitoxin-aeq3a-like and the identification of amino acid residues that correspond to a serine peptidase binding site. Our findings expand our understanding of the diversity of toxins present in sea anemone venom and shed light on their potential role in protecting other venom components from proteolysis.
Fomento	-