

TITLE: ANTIFUNGAL ACTIVITY WITH FRUIT PEPTIDES *Capsicum annuum*.

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ABSTRACT:

Antimicrobial peptides (AMPs) are polymers of amino acids that participate in the first line of defense of plants against pathogens. These are so named because of their broad spectrum of activity against gram-positive, gram-negative bacteria, fungal and parasitic. Therefore, the aim of this work was to extract, purify and evaluate the antifungal activity of peptides present in the fruits of *Capsicum annuum* (access UENF 1381) against *Candida buinensis*. Initially, a protein extraction was carried out on *C. annuum* fruits, in which it was subjected to reverse phase chromatography on a HPLC system C2C18 column and this whole process was monitored by tricine gel electrophoresis. All fractions obtained after HPLC chromatography were tested in antifungal and membrane permeabilization assays. These tests demonstrated that the electrophoretic profile of the crude extract has mainly proteins with molecular mass ranging from 6 to 14 kDa. After the chromatography process, 6 fractions were obtained being denominated F1, F2, F3, F4, F5, F6. All 6 fractions were used in a growth inhibition assay against yeast *C. buinensis*, where all were able to inhibit the growth of this yeast with the exception of the F1 fraction. The fractions F2, F3 and F4 were the ones that presented a greater inhibitory effect causing a reduction of the growth of 88, 100 and 94% respectively. In this work we also analyzed the effect of the different fractions on the permeabilization of the plasma membrane of this microorganism using the Sytox Green probe. We observed that all fractions with the exception of F1, were able to cause some structural alteration in the plasma membrane leading to the permeabilization of the same ones. The results pointed out the ability of these peptide fractions to penetrate the target cells, interacting with the cell membranes, exhibiting an efficient antifungal activity and, therefore, deserve attention in the search for new bioactive compounds with potential application in the research and in the pharmaceutical industry.

Keywords: Antimicrobial peptides, *Candida*, antifungus.

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