

## ***Mo*-CBP<sub>2</sub>, a Chitin-Binding Protein from *Moringa oleifera* Seeds, Presents Anticandidal Activity by Increasing Cell Membrane Permeability and ROS Production**

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**Introduction.** *Candida* species encompass a group of yeasts that normally live on the skin and mucous surfaces of human beings and other animals, in which the infectious disease, candidiasis, can occur with severe consequences, particularly for immunocompromised patients. The available antifungal drugs used for the candidiasis treatment are usually toxic and can lead to the development of resistant strains. A promising alternative to the conventional treatments is the use of plant proteins. *M. oleifera* is a plant with valuable medicinal properties, including antimicrobial activity. **Objective.** This work aimed to characterize *Mo*-CBP<sub>2</sub> and to evaluate its anticandidal properties against *Candida* species. **Material and Methods.** *Mo*-CBP<sub>2</sub> was purified through chitin affinity chromatography followed by cation exchange chromatography. Its molecular mass was determined by electrophoresis, gel filtration chromatography and mass spectrometry. Anticandidal activity was evaluated by broth microdilution method. **Results and Discussion.** *Mo*-CBP<sub>2</sub> appeared as a single band on native PAGE. By mass spectrometry, *Mo*-CBP<sub>2</sub> presented 13,160 Da. After native gel filtration chromatography (pH 7.5) two protein peaks with molecular masses of 33.0 and 66.0 kDa emerged from *Mo*-CBP<sub>2</sub>. By SDS-PAGE, *Mo*-CBP<sub>2</sub> migrated as a single band with an apparent molecular mass of 25.0 kDa. *Mo*-CBP<sub>2</sub> is a basic glycoprotein (pI=10.9) with 4.1% sugar. The tryptic peptides from *Mo*-CBP<sub>2</sub> revealed similarity with other *M. oleifera* proteins and 2S albumins. *Mo*-CBP<sub>2</sub> possesses *in vitro* antifungal activity against *Candida albicans*, *C. parapsilosis*, *C. krusei* and *C. tropicalis*, with MIC<sub>50</sub> ranging from 62.5 to 179 µM. In addition, *Mo*-CBP<sub>2</sub> increased the cell membrane permeability and ROS production in *C. albicans*. **Conclusion.** These results suggest that *Mo*-CBP<sub>2</sub> exists in different oligomeric forms and point out its potential use as a new antifungal protein active against *Candida* spp.

Keywords: *Moringa*, antifungal protein, *Candida* spp.

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