Effective Antimicrobial Activity of a Peptidase Inhibitor from *Platypodium elegans* Seeds Against Pathogenic Microorganisms

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INTRODUCTION: Plant peptidase inhibitors (PI) have shown effective characteristics and properties against a large variety of pathogenic microorganisms. Due the overwhelming increase of the antibiotic resistance of clinically important bacteria, studies of new plant compounds with antimicrobial properties have contributed with significant results in therapeutic treatments. **OBJECTIVES:** In this study, we investigated the antimicrobial activity of *Platypodium elegans* peptidase inhibitor (PeTI). **MATERIAL AND METHODS:** PeTI was purified from seeds and the antimicrobial activity was analyzed toward five bacterial and three fungal strains. For antibacterial activity, PeTI (200 $\mu g.mL^{-1}$) was incubated with the bacterial strains (5 x 10^5 $CFU.mL^{-1}$) in MH broth at 37 ºC, for 24 h. The bacterial growth inhibition was monitored at 595 nm, at every 30 min. For antifungal activity, the PeTI (50 and 100 $\mu g.mL^{-1}$) was incubated with the fungal strains (10^4 $cells.mL^{-1}$) in Sabouraud broth culture medium at 30 ºC, for 24 h. The fungal growth inhibition was monitored at 620 nm, at every 6 hours. After this assay, the fungal cells were observed by differential interference contrast (DIC) microscopy (400x). **RESULTS AND DISCUSSION:** In bacteria, the PeTI showed inhibitory activity against *Staphylococcus aureus* (93.06%), *Staphylococcus epidermidis* (41.61%), *Escherichia coli* (92.82%), *Enterobacter aerogenes* (95%) and *Klebsiella pneumoniae* (91.61%). In fungi, at 100 $\mu g.mL^{-1}$, PeTI completely inhibited *Candida albicans* and *Candida buinensis* growth, while the growth inhibition for *Candida tropicalis* was 50%. DIC microscopy, showed a growth reduction of the PeTI-treated fungal cells, indicating the inhibition of yeasts. **CONCLUSIONS:** Therefore, PeTI demonstrates to be a potential biotechnological tool for the control of pathogen microorganisms.

Keywords: Peptidase inhibitors, *Platypodium elegans*, Antimicrobial activity.

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