Antimicrobial Activity of Protein from *Anadenanthera falcata* seeds

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INTRODUCTION. The association between the use of antibiotics and the development of bacterial resistance has been known since the introduction of penicillin. There is a continuous need for antibiotics, mainly with new mechanisms of action. Plant antimicrobial peptides and proteins (AMPs) are considered as promising antibiotic compounds with important biotechnological applications. **OBJECTIVE:** Purify protein compounds from *Anadenanthera falcata* seeds and evaluate their antimicrobial activity against nosocomial bacteria. **MATERIALS AND METHODS:** *A. falcata* seeds were peeled, mashed and delipidated with hexane. The extraction was realized with the solution 10 mM Na_2HPO_4, 15 mM NaH_2PO_4, 100 mMKCl, EDTA 1,5% pH 5,4. Then, the crude extract was dialyzed and liophilyzed. It was purified onto a Red Sepharose CL-6B chromatography column. The retained fraction was applied onto C-18 HPLC column with acetonitrile non-linear gradient. The proteins profile of each purification steps was observed by SDS-PAGE analysis. The antimicrobial activity of protein fractions was monitored by broth micro-dilution assay, according to Control Laboratory Standards Institute (M-7 A-9). Therein, the bacteria species evaluated were *Escherichia coli* ATCC 8739 and *Klebsiella pneumoniae* ATCC 13883. **RESULTS AND DISCUSSION**: The retained fraction from Red Sepharose chromatography showed a range of molecular weigh between 8 to 38 kDa. The antimicrobial assay demonstrated that this protein fraction has a strong inhibitory activity against *E. coli* (76,42%) and *K. pneumoniae* (95,44%). Nevertheless, RP-HPLC analysis revealed the presence of three major peaks eluted in a short interval of acetonitrile, and now they are under further investigation. **CONCLUSION:** The results revealed that the proteins from *A. falcata* seeds have a large biotechnological potential as an antimicrobial product.

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