

TITLE: ANTIMICROBIAL ACTION OF ENDOPHYTIC FUNGI ISOLATED FROM *Handroanthus albus* AGAINST *Escherichia coli*

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ABSTRACT:

Endophytic fungi are microorganisms that reside within plant tissues in a symbiotic relationship, producing secondary metabolites, which have been exploited for their biological activities with biotechnological applications. The aim of the present study was to isolate endophytic fungi from *Handroanthus albus* (yellow ipe) and analyze the antimicrobial activity of its secondary metabolites against the pathogenic bacteria *Escherichia coli*. The flowers of the plant were washed and submitted to a superficial disinfection process with 70% alcohol and 3% sodium hypochlorite, cut into 1cm² fragments, distributed in Petri dishes containing PDA medium (Potato Dextrose Agar) with 1 mg.mL⁻¹ of terramycin and incubated at 25°C for seven days. To obtain the secondary metabolites, the fermentation was carried out in a shaker in BD medium at 25°C for nine days, at 160 rev/min. The fermented medium was filtered, a part was set aside (aqueous fraction), one was separated in a separatory funnel using chloroform and the other in ethyl acetate. The material obtained was concentrated by rotary evaporation below 50°C to 1 ml of compound. The Minimum Inhibitory Concentration (MIC) of the aqueous fraction in chloroform and ethyl acetate of the metabolites of 14 endophytic fungi was determined by microdilution in Muller-Hinton broth in 96-well plates, at concentrations of 5%, 10%, 25% and 50%, with tests performed in triplicate, including positive and negative controls using the *E. coli* ATCC25922 bacterium. Of the 14 fungal metabolites tested in fermented medium, only two showed antimicrobial activity with 5% MIC and two 50% MIC. All metabolites obtained in ethyl acetate inhibited the growth of *E. coli*, showing a MIC of 5%. As for chloroform, 10 of the fungi had a MIC of 5%, two MIC of 10% and two MIC of 25%. Taking into account the fractions obtained, there was greater activity in ethyl acetate and chloroform, as they are solvents that, as well as the aqueous fraction, can isolate compounds such as terpenes, while the greatest activity may have been due to the extraction of flavonoids (chloroform and ethyl acetate) and phenolic compounds (ethyl acetate). The identification of the compounds, as well as the evaluation of their activity at lower concentrations will be carried out, since some of the endophytic fungi isolated from *H. albus* show promise in the antibacterial action against *E. coli*, and can be considered a source of new antimicrobials.

Keywords: Endophytes, Infections, Minimum Inhibitory Concentration (MIC), bioactive compounds.