

TITLE: ANTIMICROBIAL ACTIVITY OF ENDOPHYTIC FUNGI ISOLATED FROM *Glycine Max* AND *Eucalyptus benthamii* FROM BRAZIL

AUTHORS: MOURA, S.S.T^a; PROVENZI, M.A^a; PIMENTEL, I.C^b; ROBL, D.^a; FERREIRA, F. A.^a

INSTITUTION: ^aUNIVERSIDADE FEDERAL DE SANTA CATARINA, FLORIANÓPOLIS, SC (Laboratório de Microbiologia), Departamento de Microbiologia, Imunologia e Parasitologia - CEP: 88.040-970, Florianópolis-SC, Brasil.

^bUNIVERSIDADE FEDERAL DO PARANÁ, (Laboratório de Microbiologia e Biologia molecular), Departamento de Patologia básica. Curitiba, Paraná, Brasil

ABSTRACT:

Antimicrobial resistance constitutes a great challenge for public health. ESKAPE group is leading causes of multidrug resistant hospital acquired infection. Therefore, new sources of compounds with antimicrobial activity are urgently needed. Endophytic fungi are traditionally known by their potential to produce various bioactive molecules. However, their potential to produce antimicrobial compounds remains not widely explored, especially in Brazil. This study aimed to evaluate the antimicrobial activity of 49 endophytic fungi isolated of plants from Brazil (*Glycine Max* and *Eucalyptus benthamii*). Initially, the collection was screened using the method of fungi agar block diffusion against standard microbial strains: *Staphylococcus aureus* ATCC25923, *Escherichia coli* ATCC25922 and *Candida albicans* ATCC10231. In this screening, 6 fungi showed an inhibition halo against at least one of the strains. One isolate showed antimicrobial activity against all the three strains tested. The six isolates were identified base on morphology as *Penicillium* sp. (3 isolates), *Aspergillus* sp. (2 isolates) and *Trichoderma* sp. (1 isolate). In order to study novel fungi as producers of antimicrobial compounds, the isolate of *Trichoderma* sp. from the initial screening and 3 other isolates identified as *Paecilomyces* sp., *Talaromyces* sp. and *Annulohypoxylon* sp. were selected among the collection. Concentrated liquid cultures of the 4 fungi isolates were tested on agar using the method of agar diffusion against additional 5 standard strains: *S. aureus* ATCC29213, *S. aureus* ATCC6538P, *Enterococcus faecalis* ATCC29212, *Salmonella* Typhimurium ATCC14028 and *Pseudomonas aeruginosa* ATCC9027. Two fungi showed antimicrobial activity at least against *C. albicans* ATCC 10231 strain. One of then showed additional activity against *S. aureus* ATCC29213, *S. aureus* ATCC6538P and *Salmonella* Typhimurium ATCC14028 strains. These two fungi were selected to perform further analysis regarding the antimicrobial compounds (in progress). This study reported at least two endophytic fungi from *G. Max* and *E. benthamii* able to produce bioactive compounds with pharmaceutical potential against members of ESKAPE group and *C. albicans*, and may provide a new lead in the pursuit of new biological sources of drug candidates.

KEYWORDS: Antimicrobial activity; Endophytic fungi; Bacterial pathogens.

DEVELOPMENTS AGENCY: Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES) and Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq).