

TITLE: ANTIBACTERIAL ACTIVITY OF EXTRACT FROM ENDOPHYTIC FUNGI

AUTHORS: TAVARES, D.G.¹; BARBOSA, B.V.L.¹; PICCOLI, R. H.¹; SOUZA, P.N.C.²; DUARTE, W.F.¹; CARDOSO, P.G.¹

INSTITUTION: ¹UNIVERSIDADE FEDERAL DE LAVRAS, LAVRAS, MG (AVENIDA DR. SYLVIO MENICUCCI, 1001, KENNEDY, LAVRAS – MG, BRAZIL)

²UNIVERSIDADE FEDERAL DOS VALES DO JEQUITINHONHA E MUCURI, JANAÚBA, MG (AVENIDA MANUEL BANDEIRA, 460, VEREDAS, JANAÚBA – MG, BRAZIL)

ABSTRACT:

In view of the increasing in bacterial resistance to many different drugs, the search for new antimicrobial molecules has been growing recently. Studies have demonstrated the potential of endophytic fungi and many antimicrobial molecules have been isolated and characterized. The objective of this work was to evaluate the activity of ethyl acetate (EtOAc) extract from endophytic fungi against pathogenic bacteria, determining their minimum bactericidal concentration (MBC). The fungi used for this work were: *Epicoccum nigrum* (A2C32), *E. nigrum* (A2S61), *Arcopilus* sp. (A2C54) and *Periconia ignaria* (A2C47) isolated as endophytes from the Candeia (*Eremanthus* sp.) plant. The fungi used are part of the collection of the Laboratório de Bioprospecção e Genética de Fungos Filamentosos (BIOGEN) from the Universidade Federal de Lavras, Brazil. The pathogenic bacterial species used in this study were enterotoxigenic *Escherichia coli* 055, enteropathogenic *E. coli* ATCC 35401, *Salmonella* Enteritidis S64, *S. Typhimurium* S190, *Listeria monocytogenes* ATCC 19117, *Staphylococcus aureus* GL 8702, *S. aureus* GL 5674, *Cronobacter sakazakii* ATCC 29004, *Pseudomonas aeruginosa* ATCC 25853 and *Aeromonas hydrophila* ATCC 7966. The fungi were grown in 1 L of PD broth (200 g L⁻¹ potato; 20 g L⁻¹ glucose), and the cultures were filtered and extracted twice by liquid-liquid partition with volume 0.5 ethyl acetate (EtOAc). The extracts were concentrated in a rotary evaporator and the negative control was obtained by extraction from the PD broth without the inoculum. Two fungal extracts that showed antibiotic activity in the disk diffusion test were determined to their minimum bactericidal concentration (MBC). The extracts of the *Periconia ignaria* (A2C47) the MBC ranged from 5 to 1.25 mg mL⁻¹ against all bacteria except *E. coli* 055 and ATCC 35401 and *S. Enteritidis* S64. The extract of the *Arcopilus* sp. (A2C54) exhibited the highest bactericidal activity, with MBC 0.00244 and 0.0195 mg mL⁻¹ for *Staphylococcus aureus* GL 8702 and GL 5674, respectively, and 0.625 mg mL⁻¹ for *Salmonella* Enteritidis. The extract of *Arcopilus* sp. (A2C54) presents high antibacterial activity and these results show the potential of this fungus as new sources of antimicrobial metabolites.

Keywords: Secondary metabolites, *Arcopilus* sp., *Periconia ignaria*, antimicrobial, foodborne pathogenic bacteria

Developmenty Agency: FAPEMIG, CAPES e CNPq