

Title: EXPLORING THE POTENCIAL OF FUNGI FROM SÃO PAULO ZOO COMPOSTING AS SOURCES OF ANTIMICROBIAL AND ANTIPARASITIC COMPOUNDS

Authors Calado, J.C.P.¹; Casula, I.²; Navarro, M.V.¹; Castilho, D.G.¹; Chaves, A.F.A¹; Conceição, P.M.²; Vasconcellos, S.P²; Xander, P.¹; Batista, W.L.^{1,2}.

Institution ¹Departamento de Microbiologia, Imunologia e Parasitologia/UNIFESP-São Paulo - Brazil; ²Departamento de Ciências Biológicas/UNIFESP - Diadema – Brazil.

Abstract:

Composting is a way of transforming the organic material into stable compound. During this process, a variety of microorganisms participate in decomposing the organic material, as filamentous fungi which produce a range of complex secondary metabolites with bioactive properties. Environmental biodiversity is one of the factors that contributes to discovery of new compound bioactives. In Brazil, there are a great biodiversity, but few environments and microorganisms with technological potential were explored. Atlantic Forest corresponds an extremely important biome to biodiversity due to their composition and complex interactions, but their microbiological aspects are still poorly known and explored. The present work aimed to evaluate the *in vitro* antibacterial and antiparasitic activity of organic crude extracts of fungi isolated from composting from São Paulo Zoo, which is located in Atlantic Forest area. A total of 71 isolated fungi from the composting of São Paulo Zoo - Brazil were cultured and the secondary metabolites were tested *in vitro* to determine their antibacterial activity against four bacterial species: *Staphylococcus aureus* ATCC 25923, *Bacillus cereus* ATCC 10876, *Escherichia coli* ATCC 25922, *Pseudomonas aeruginosa* ATCC 15442 and antiparasitic activity against *Leishmania amasonensis*. Secondary metabolites were obtained from fungus cultured in MEA medium for 7 days at room temperature. The antibacterial ability of organic extracts were tested by using disc agar diffusion and microdilution methods. Our results showed that the crude extracts were highly active against the Gram-positive bacteria *S. aureus* (32%) and *B. cereus* (17%) and less active against Gram-negative bacteria *P. aeruginosa* (1,4%) and *E. coli* (1,4%). Similar results were observed in microdilution test. The antiparasitic ability against *Leishmania amasonensis* was tested by using microdilution method. Preliminary results showed that crude extract led a reduction in the viability of the parasites when low concentrations were tested. The analysis of the chemical composition by nuclear magnetic resonance (NMR) are being investigated further. These findings are very important to discovery of new effective molecule for future application as supporting or new antimicrobial compounds.

Keywords: Composting; Fungus; Secondary Metabolite; Antimicrobial Activity; Antiparasitic Activity.

Support by: CNPq, CAPES and FAPESP.