Title: ANTIMICROBIAL POTENCIAL OF ISOLATED FUNGI FROM ANTHROPOGENIC DARK EARTH FROM CENTRAL AMAZON REGION

Authors Amatto, I.V.S. [1], Carvalho, P.L.N. [1], Ariosa, M.C.F. [1], Vieira, D.C.M. [1], Terceti, M.S. [2].

Institution [1] UNIFAL - Universidade Federal de Alfenas (Rua Gabriel Monteiro da Silva 700-Centro-37.130-000-Alfenas-MG), [2] USC – Universidade de Santiago de Compostela (Praza do Obradoiro, s/n, 15782 Santiago de Compostela, A Coruña, Espanha).

Abstract:

The microbial community of soils is essential to the ecosystem functioning, being instrumental in decomposition processes of organic matter, in nutrients availability to plants and cycling of nutrients. An example of soil, whose microbial diversity is extremely high, is the Anthropogenic Dark Earth (ADE) or Indian Dark Earth (IDE), known for your fertility and extensive wealth of nutrients, however understudied from the point of view of microbial diversity and biotechnological potential. The microorganisms are potential producers of bioactive substances of great importance in the area of health. In this way, this study aimed to test the antimicrobial activity of 15 previously isolate fungal from ADE, named F2, F3, F4, F5, F6B, F6C, F7, F8, F9, F11, F12, F14, F15, F16 and F17. The isolates were submitted trough the screening on agar block, being each isolate confronted directly with three pathogens: *Staphylococcus aureus* (*SA* - ATCC 6538), *Escherichia coli* (*EC* - ATCC 25922) and *Candida albicans* (*CA* - ATCC 10231). The inhibition halos were measured and it was found that 5 isolate fungal present halo (in mm) front to *SA* and *CA*, respectively: F5: 34 and 14; F6B: 21 and 14; F6C: 16 and 15; F8- 20 and 14; F11: 50 and 30. The isolate named F16 exhibit halo only against *SA* (36mm). The inhibition against the three pathogens tested was observed only for the F12, being the values (mm) to *SA* 20, *EC* 35 and *CA* 25. This fungus (F12) was selected to explore more your antimicrobial potential. Then was performed the determination of minimum inhibitory concentration (MIC) and the minimum bactericide concentration (MBC), from the fermentation process in czapeck broth and extraction with ethyl acetate. The values to MIC and MBC, were, in $\mu g.mL^{-1}$, respectively: *S. aureus* 200-400 and >400; *E. coli* 50-25 and 50-100; *C. albicans* 200-400 to MIC and MBC. Considering these preliminary results is possible infer that the isolates fungal from ADE can be a promising source of antimicrobial compounds, highlighting the importance of studies about microbial diversity of ADE.

Keywords: Antimicrobial activity, bioactive potential, dark earth, isolate fungal.

Development agency: FAPEMIG