

Research of bioactive compounds on extracts of endophytic fungi from *Tabebuia* sp.

Sandra B. N. Agostini¹ (PG), Patrícia L. N. Carvalho¹ (PG), Jaíne H. H. Luiz^{1*} (PQ)

¹ Universidade Federal de Alfenas – UNIFAL-MG

*R. Gabriel Monteiro da Silva, 714, Centro, Alfenas-MG, 37130-000 – Instituto de Química e-mail: jainejh@gmail.com

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Introduction

Since antiquity, natural products are used as medicines. Relevant examples of this are taxol, vincristine and camptothecin, currently in use against cancer¹. All of them have been first isolated from plant species. Later, it was proved that endophytic fungi from those medicine plants are able to produce the same compounds. Biotechnological techniques allow that drugs can be obtained in such a more sustainable and saving way, in agreement with green chemistry call².

The extensive use of *Tabebuia* sp. in popular medicine has motivated several researches. These works had demonstrated that extracts and isolated compounds from these trees exhibit different biological effects. One of these is antitumor action from lapachol. The aim of this work is to study the chemical composition and pharmacological activity from extracts obtained by fermentation of endophytic fungi isolated from *Tabebuia* sp.

Results and Discussion

148 endophytic fungi strains from *Tabebuia* sp. leaves and petioles were isolated and purified. Each one was tested against *Candida albicans* ATCC 10231, *Staphylococcus aureus* ATCC 6538 and *Escherichia coli* ATCC 25922 by agar piece method³. One fungus (C) inhibited *S. aureus* growth. This one and another four (A, B, D and E), selected according to colour and intensity of the pigment produced, were fermented in Czapeck broth, 28°C, during 15 days. Two of them (C and D) were fermented such in shaking as statically. The antibiotic activity of the extracts from fermentation was checked by agar diffusion test. The minimum inhibitory concentration (MIC) was found for some cases by micro-dilution in broth method⁴. None of the extracts inhibited *E. coli* growth. The other results are displayed in Table 1.

The fungus that produced the most promising antibiotic extract (C) was fermented, with stirring, in the same conditions, on a larger scale. The extract from the second fermentation was separated by silica cartridge using hexane - ethyl acetate - methanol in elution gradient. The fractions were

examined by thin-layer chromatography (TLC) followed by UV (254 nm)-exposure, as shown in the Figure 1.

Figure 1. Fractions from extract obtained by stirring fermentation of fungus C analyzed by TLC and UV (254 nm)-exposure

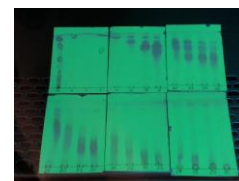


Table 1. Antibiotic activity of ethyl acetate extract from *Tabebuia* sp. endophytic fungi checked by agar diffusion test and MIC

extracts	<i>C. albicans</i>		<i>S. aureus</i>	
	Øinhibition zone (mm)	MIC (µg.mL ⁻¹)	Øinhibition zone (mm)	MIC (µg.mL ⁻¹)
A	-	*	12	> 1000
B	-	*	-	*
C static	-	*	19	> 1000
C stirring	15	1000-500	25	250-125
D static	-	*	13	>1000
D stirring	-	*	10	500-250
E	-	*	-	*

(-) no activity

(*) untested

Conclusões

Ethyl acetate extracts from *Tabebuia* sp. endophytic fungi inhibited *C. albicans* and *S. aureus* growth. Further studies are being carried out in order to study the chemical composition of the extracts as well as another biological activities.

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