Secondary Metabolites Production by *Exserohilum sp* Fungus and its Effects on Protein Expression in Endothelial Cells

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INTRODUCTION: An endophytic fungus was isolated from the plant *Croton blanchetianus* of Caatinga and has been studied as a source of new molecules with biotechnological applications. **OBJECTIVES:** In this study, the focus was to evaluate different culture broths and time of culture to find the best condition for the production of two secondary metabolites produced by a fungus of the *Exserohilum* genus. **MATERIALS AND METHODS:** The fungus *Exserohilum* sp was cultivated in potato dextrose broth (PD) for 3, 7, 10, 15 and 30 days and the culture was processed to obtain crude organic extract that was fractionated and purified by high performance liquid chromatography (HPLC). In the next step, the fungus was cultivated in different culture broths such as potato dextrose broth, malt extract, Czapeck broth, minimal broth, YESD, YPSS or PYG to evaluate the effectiveness for secondary metabolites production. The expression of some proteins related to cell proliferation and angiogenesis in human umbilical vein endothelial cells (HUVEC) was analyzed by western blotting after treatment of the cells during 6 and 24 hours with the purified fraction FV3F2. **RESULTS AND DISCUSSION:** The crude extract was purified resulting in fractions F1 and F2 that were physical-chemical characterized as monocerin and annularin derivatives coded as FV3F1 and FV3F2, respectively. The best condition for production of these secondary metabolites was 15 days in potato dextrose broth. The treatment of HUVEC with compound FV3F2 at 0.15 and 0.625 mM reduced the proteins expression for TGF-β, VEGF-1 and cyclinD1 for both concentrations at 6 and 24 hours indicating that this metabolite could affect different pathways involved in cell proliferation. **CONCLUSIONS:** New assays are in development to find the pH conditions to improve the secondary metabolites production by the fungus, and to understand their mechanism of action in cell proliferation.

Key words: endothelial cells, fungus, secondary metabolites.

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