

Antibacterial Activity Screening of Crude Extracts Obtained from Native Fungi of Tropical Rainforest in Colombia

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Abstract

Bioactive secondary metabolite production from fungal strains has become a recurring research focus in recent decades, as these microorganisms represent an unexplored biological niche for its diverse biotechnological potential. Despite this, studies involving tropical fungi remain scarce, particularly those isolated from medicinal plants of these ecosystems. Also, the state of the art of the pharmaceutical industry has been experiencing stagnation for the last 30 years, a situation that has led to pathogen infections being one-step ahead, developing resistance to existing treatments. This study aims to find promising bioactive producers through the screening of the antibacterial activity of crude extracts obtained from the fermentation of endophytic and polypore fungi isolated from *Otoba gracilipes* and *Vismia baccifera*, medicinal trees from native ecosystems. In this study, twelve fungal strains isolated from these medicinal trees (Six endophytes and six polypore fungi) were cultured in PDB medium. After all the available carbon sources were depleted, both the mycelium and the exhausted medium were subjected to an extraction process of the metabolites present in organic phases. Even when most of the evaluated strains have presented antibacterial activity, the exhaust medium crude organic extract from the endophyte *Xylaria* sp. displayed high antibacterial activity against both *Escherichia coli* ATCC 25922 and *Staphylococcus aureus* ATCC 25923 with a half-maximal inhibitory concentration (IC₅₀) of 16.84 and 14.29 mg/mL respectively. The above supports the potential of Colombian native biodiversity to provide new approaches to the global emergence of antibiotics resistance and future production of undiscovered compounds different from current antibiotics classes, and at the same time calling for the value of preserving native habitats due to their promising ecosystemic applications in the biotechnological and pharmaceutical industries.

20 mathematicians at undergraduate level in Colombia. During his young research journey has collaborated in international projects with UCL, as part of research groups at the Biotechnology Science master in ICESI, mainly working in microalgae biorefinery approaches and In silico strategy desing through systems biology. These efforts has given him the recognition of young talent from Minciencias, currently he is working in the production of bioactive compounds obtained from the fungal communities of Colombia tropical rainforest.



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Biography:

Esteban Charria Girón at the age of 20 is a last year student of Biochemical Engineering at ICESI University and one of the top