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BIOCHEMICAL AND MOLECULAR CHARACTERIZATION OF ANTIBACTERIAL PEPTIDES OBTAINED FROM BASIDIOMYCETE MUSHROOMS ISOLATED FROM THE BOTANICAL GARDEN OF THE UNIVERSIDAD TECNOLOGICA DE PEREIRA

Luz Stella Ramírez Aristizabal[1], Ángela María Arango Londoño[1*], Adalucy Álvarez Aldana[2]

luramire@utp.edu.co

1-Universidad Tecnológica de Pereira, Faculty of Technology, School of Chemical Technology, Laboratory of Microbiology and Biological Activity, Pereira, Colombia. 2- Universidad Libre, Pereira Section, Faculty of Health Sciences, Microbiology Program, Pereira, Colombia.
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The escalating global health crisis of antimicrobial resistance needs the urgent discovery of novel therapeutic agents from underexplored natural sources. Our region, and particularly the Botanical Garden of the Universidad Tecnológica de Pereira (JBUTP), is a biodiversity hotspot, home to a vast and largely unexplored array of fungal species with significant biotechnological potential. This research addresses this critical challenge by investigating the rich fungal biodiversity of the JBUTP as a promising reservoir for antibacterial compounds. The primary objective of this initial phase was the isolation, cultivation, and comprehensive identification of basidiomycete fungal specimens exhibiting potential for producing bioactive substances. Fungal specimens (coded JAD01, JAD02, JAD03) were collected from various decaying substrates within the JBUTP, adhering to established collection protocols and permits. Laboratory cultivation was initiated using diverse media (PDA, Sabouraud, Rose Bengal Agar) to assess optimal growth patterns. Identification employed a multi-faceted approach, combining detailed macroscopic (e.g., pore structures, fruiting body characteristics) and microscopic analyses (e.g., hyphae, spores, clamp connections from mycelia and carpophore sections). Molecular identification was performed via ITS ribosomal DNA region sequencing, and preliminary findings confirmed that the collected fungi belong to the Phylum Basidiomycota, specifically within the order Polyporales, aligning with previous regional biodiversity reports. Macroscopic and microscopic observations consistently revealed morphological features typical of these groups. Molecular identification successfully confirmed isolate JAD 01 as *Cubamyces menziesii*, JAD 02 as *Coprinellus disseminatus* and JAD 03 as *Rigidoporus microporus*. These verified identifications establish a robust foundation for subsequent stages of the research, which will focus on the extraction, purification, and characterization of antibacterial peptides from these specific fungal species.