Macromycetes metabolites to fight multidrug resistant bacteria

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Abstract

Antibiotic resistance is becoming one of the major concern for the world public health [1]. As the armamentarium dries up, promising natural resources must be explored for the discovery of new antibiotics. In this regard, we chose to explore the antibacterial potential of wild mushrooms [2]. Seventy two extracts of macromycetes were screened on 5 pathogenic bacterial strains using a direct bioautography on thin layer chromatography (TLC-DB) technique. The most potent extracts (regarding the number of antibacterial zones and the spectrum of activity) were then screened on 8 multidrug resistant bacterial strain, highlighting the potential of several extracts against antibiotic resistance. Active metabolites revealed by bioautography were identified as fatty acids such as stearic acid after high resolution mass spectrometry (HRMS) and NMR. Characterization of other bioactive metabolites is still in progress. The chosen approach combining bioautography with various strains followed by desorption on TLC and further structural characterization allowed us to accelerate the identification of antibacterial constituents from mushrooms extracts. Further assays are mandatory to confirm the antibiotic potential of these compounds.

References

1 Michael CA. et al. The Antimicrobial Resistance Crisis: Causes, Consequences, and Management. Front. Public Health. 2014

2 Alves MJ. et al. A Review on Antimicrobial Activity of Mushroom (Basidiomycetes) Extracts and Isolated Compounds. Planta Med. 2012