
ORAL PRESENTATIONS

NEW BIOACTIVE SECONDARY METABOLITES FROM THE MARINE- DERIVED FUNGI

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Marine-derived fungi are prolific producers of structurally diverse and biologically active secondary metabolites. In our study, the secondary metabolites of the marine-derived fungi were investigated by an integrated approach combining molecular networking, HSQC based DeepSAT and SMART analyses, and heterologous expression strategies. This led to the isolation and characterization of a series of novel compounds, including prenylated indole alkaloids, sesquiterpenes, heterodimeric meroterpenoids, cyclopentenone dimers, anthrone-cyclopentenone dimers and polyketides. Bioactivity screening revealed that some of these compounds exhibit anti-MRSA, α -glucosidase inhibitory, cytotoxic, and antifungal activities. Notably, a pyridone compound exhibits low cytotoxicity and a low hemolysis rate, along with rapid bactericidal activity and the ability to increase bacterial cell membrane permeability. Mechanistic studies suggest that this compound exerts antibacterial effects through multiple synergistic pathways, including inhibiting bacterial energy metabolism, regulating membrane transport processes, and interfering with quorum sensing and biofilm formation. This study not only expands the chemical diversity of marine fungal natural products but also provides new leads for drug discovery.