
METABOLOMIC PROFILING AND CYTOTOXIC POTENTIAL OF UNCHARACTERIZED MARINE BACTERIA FROM THE BRAZILIAN COASTLINE AS A SOURCE OF NOVEL BIOACTIVE COMPOUNDS

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Marine environments, particularly along Brazil's extensive coastline, represent a promising source of novel bioactive compounds. These regions host a high diversity of marine microorganisms, especially bacteria containing yet-undiscovered compounds with pharmaceutical potential. Advances in metabolomics are opening new avenues for drug discovery by improving the ability to predict, detect, and characterize novel compounds. In this context, the present study analyzed 98 previously uncharacterized marine bacterial strains isolated from ascidian *Herdmania pallida*, aiming to investigate their metabolomic profiles and biological potential through cytotoxicity assays. The isolated strains were cultured in A1 medium (starch 10 g/L, yeast extract 4 g/L, peptone 2 g/L) prepared with 75% seawater and incubated under agitation at 28°C and 200 rpm. After 7 days, liquid cultures were extracted with ethyl acetate (1:1). Extracts were sent to LNBio/CNPEM through the collaborative project Bank of Molecules, where they were registered, stored under low temperatures and inert atmosphere, and further processed. Subsequently, UPLC-MS/MS analyses and cytotoxicity assays were performed on all samples. The LC-MS/MS data obtained (mzXML) were processed using the NP³ MS Workflow, and chemical annotations were performed with GNPS and UNPD databases. In total, 3,109 protonated compounds [M+H]⁺ were detected, of which 161 (5.17%) were annotated and classified into ten grouped chemical superclasses. The most representative annotated compounds belonged to "Alkaloids & Lactams" and "Terpenes & Carotenoids". The remarkably high proportion of unannotated compounds (94.83%), most of which occur in clusters exclusively associated with specific marine bacterial strains, highlights the potential novelty and uniqueness of this collection. Among all extracts evaluated in the cytotoxicity assay, 15 were selected for dose-response curve construction, of which 3 exhibited a selectivity index greater than 2 against the HCT-116 cell line. These findings suggest that these strains may be promising sources for the discovery of new antitumor compounds derived from Brazilian marine bacteria.

Acknowledgement: Fapesp (proc. 2023/08735-1).

Keywords: Metabolomics, microorganism, marine bacteria, cytotoxic assays, NP³ MS Workflow

