10th Brazilian Conference on Natural Products
XXXVI RESEM
4-7 November 2025, Belo Horizonte, MG, Brazil
Section: 03

ONE STRAIN–MANY COMPOUNDS: STUDIES WITH Streptromyces sp. (BRA-010), A STRAIN RECOVERED FROM THE TUNICATE Eudistoma vannamei

Elthon Gois Ferreira[1*], Nicolas Ledres[1], Luís Guilherme Pereira Feitosa[2], Paula C. Jimenez[3], Norberto Peporine Lopes[2], Letícia Veras Costa-Lotufo[1]

elthonferreira@usp.br

1-Laboratório de Farmacologia Marinha - Lafarmar, Departamento de Farmacologia, ICB-I, USP, Av. Prof. Lineu Prestes, 1524 - Butantã - São Paulo - SP. 2- Faculdade de Ciências Farmacêuticas de Ribeirão Preto (FCFRP), USP, Av. Prof. Dr. Zeferino Vaz - Vila Monte Alegre, Ribeirão Preto – SP, Brazil. 3. Instituto do Mar, UNIFESP, Santos-SP.

Marine bacteria and fungi possess genomes rich in biosynthetic gene clusters (BGCs) that are often unexpressed under standard laboratory conditions. The OSMAC (One Strain–Many Compounds) strategy offers an effective means to activate these silent pathways through variations in cultivation parameters. Complementarily, metabolomics provides systematic profiling of metabolic outputs and facilitates the annotation of bioactive compounds. Together, these approaches play an important role in the chemical mining of marine natural products. The present work aimed to perform chemical mining of compounds with anticancer potential from the BRA-010 strain under modified cultivation conditions. The marine strain BRA-010 deposited in the microorganism bank (MicroMarin) was reactivated in liquid culture medium A1 (starch, peptone and yeast extract) for 7 days under agitation at 200 rpm. The strain was cultivated in duplicate for 7 days under agitation at 200 rpm in different cultures with the elicitors: dimethylsuffoxide (DMSO), ampicillin, procaine hydrochloride, sodium butyrate, nickel sulfate and ethanol. Each culture broth was extracted during 1 h with equal volume of ethyl acetate, to obtain a crude extract of each culture. Cytotoxicity of the extracts and isolated compound was evaluated through the MTT assay after 72h exposure against colorectal carcinoma (HCT-116) and breast adenocarcinoma (MCF-7 and MDA MB 231) and melanomas (SK-MEL-28 and SK-MEL-147) cancer cell lines, and IC_{50} values were obtained. The organic extracts obtained from the BRA-010 strain in the presence of different elicitors demonstrated cytotoxic activity against only the HCT-116 cell line, except when ethanol was used as an elicitor. The analysis of the extracts with different elicitors by HPLC-MS/MS did not show significant variations between the chemical profiles of cultures, highlighting the presence of tirandamycin A as the majoritary compound in most samples. These results suggested that *Streptomyces* sp. (BRA-010) was not sensitive to the presence of the elicitors to active the production of different metabolites.

Keywords: *Marine Natural Products, Marine microorganism, OSMAC, Chemical Elicitors, Cytotoxic activity*