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

# Bioprospecting the anticancer potential of marine myxobacteria from the Brazilian coast

**Isolda de Sousa Monteiro**[1*], Renan S. Oliveira[1], Elthon G. Ferreira[2], Letícia V. Costa-Lotufo[2] e Paula C. Jimenez[1].

isolda.monteiro@unifesp.br

[1]*Instituto do Mar, Universidade Federal de São Paulo, Santos-SP, Brazil;* [2]*Instituto de Ciências Biomédicas, Universidade de São Paulo, São Paulo-SP, Brazil.*

Marine microorganisms are promising sources of bioactive compounds for human health. Among them, myxobacteria remain underexplored, especially in tropical and subtropical regions like Brazil, despite being prolific producers of secondary metabolites and widely distributed from non-saline soils to saline sediments. They are characterized by multicellular organization and the ability to synthesize structurally diverse metabolites, many of which have been recognized as potent anticancer agents. This study aimed to prospect marine myxobacteria from sediments collected along the Northern Coast of São Paulo (Ubatuba and São Sebastião) to evaluate their potential as producers of anticancer compounds. Sediment samples were plated on nutritionally poor media (WCX with *E. coli* as bait and St21 with sterile filter paper) at two salinity levels (0% and 60%). Sixteen strains were isolated, purified, and deposited in the MyxoMarin strain bank. Acetone:methanol extracts were obtained from the liquid culture of each strain and tested for cytotoxicity (MTT assay) against HCT-116 human colorectal cancer cells and HaCaT keratinocytes, and for inhibitory activity against the protease trypsin. Three extracts presented $IC_{50}$ values below 50 µg/mL against HCT-116, and were considered active: BRX-075 (6.43 µg/mL), BRX-076 (1.56 µg/mL), and BRX-079 (41.3 µg/mL). In trypsin inhibition at 50 µg/mL, extracts BRX-076 (17.20%), BRX-079 (19.61%), BRX-080 (22.68%), BRX-083 (33.07%), BRX-084 (33.50%), BRX-090 (25.03%), BRX-094 (30.49%), BRX-096 (23.97%), BRX-097 (11.08%), and BRX-098 (13.54%) showed activity, suggesting multifunctional bioactivity. Selected extracts were analyzed by HPLC, revealing distinct chemical profiles at 254 and 280 nm, and potential for further taxonomic and metabolite characterization. These findings highlight Brazilian marine myxobacteria as a promising source of novel bioactive compounds and reinforce the importance of exploring marine microbial diversity for anticancer drug discovery.

**Support:** CAPES (88887.999412/2024-00) and FAPESP (2024/19353-5; 2022/12654-4).

***Keywords:*** *marine microorganisms, cytotoxicity, protease inhibitors, blue biotechnology, marine natural products.*