

1133-1 Novel Peptides from Antarctic Seaweed Endophyte *Pseudomonas* sp. MONO11

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Resumo:

Microbial natural products represent a crucial reservoir of promising compounds for treating human and veterinary diseases, as well as controlling agricultural pests, which can cause irreparable losses in the field. Nonetheless, the prevalence of chemical redundancy observed during compound isolations has posed a challenge to the discovery of novel metabolites produced by microorganisms. In addressing this issue, one alternative approach involves exploring microbial strains in extreme environments, where living conditions impose limiting factors for most known organisms. The objective of this study was to isolate and characterize biological compounds derived from an antarctic seaweed endophyte *Pseudomonas* sp. strain MONO11, inhabiting an extreme environment. The MONO11 strain was isolated by EMBRAPA Meio Ambiente from tissues of *Monostroma hariotti*, a seaweed from Admiralty Bay, King George Island. The strain identification was carried out by 16S gene sequencing. For metabolites prospection, MONO11 was cultivated in Marine Modified medium (MM) and then, the supernatants were subjected to liquid-liquid partition with ethyl acetate. The organic fraction was subjected to lipid removal using hexane and then subsequently fractionated using Sephadex LH-20 gel permeation chromatography, employing methanol as the eluent. For the compounds purification, High Performance Liquid Chromatography (HPLC) was conducted in a Waters® 2535 Flexinjet preparative system coupled with a Waters® 2489 UV/Visible detector. The purification method was developed using X-Terra® RP18 analytical column (5µm, 4.6 mm x 250 mm) involved a gradient of deionized water:methanol:acetonitrile, starting with initial proportions of 40:30:30 and reaching final proportions of 0:50:50, with an analysis time of 23 minutes. The structural analysis of compounds, as well as the proportion between their elements, and molecular formulas prediction were assigned by combination of 1D and 2D NMR, MS and UPLC-MS/MS analyses. The strain was identified as *Pseudomonas* sp. with 99.93% of similarity within *Pseudomonas allii* strain MAFF301514 and *Pseudomonas poae* strain P527/13. Four high-molecular-weight peptides were isolated, M11Se21A (m/z: 991,5; C50H78N4O16), M11Se21B (m/z: 1005,5; C51H80N4O16), M11Se21C (m/z: 1019,5; C52H82N4O16), M11Se21D (m/z: 1033,5; C53H84N4O16). There are no descriptions of compounds with these molecular formulas in the academic databases such as Dictionary of Natural Products, Natural Products Atlas, ChemSpider, and Web of Knowledge, leading to the conclusion that they represent unique chemical structures. Absolute configuration assignment is under investigation. In the present work, we isolated four high-molecular-weight compounds produced by an extreme environment *Pseudomonas* sp. strain (MONO11) with no previously description by literature.

Palavras-chave:

bacterial natural products, extremophiles, biodiscovery

Agência de fomento:

CNPQ, CAPES, FAPESP