Área: QPN

Exploring secondary metabolites from the cyanobacterium *Allinostoc* sp. by microscale fractionation

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Highlights

A two-stage microscale fractionation strategy was used for bioprospecting. *Allinostoc* sp. showed bioactivity for HCT116 and MCF-7 cancer cells. The strain was identified using a polyphasic approach.

Resumo/Abstract

More than half of the pharmaceuticals available today are derived from or inspired by natural products.[1] Exploring the chemistry of microorganisms is a promising approach to discovering novel bioactive compounds. Brazil is a biodiverse country with extensive phytogeographic domains and favorable environmental conditions, hosting a rich diversity of cyanobacteria.[2] These photosynthetic organisms produce secondary metabolites with various biotechnological and pharmaceutical applications.[3]

In this study, *Allinostoc* sp. was cultivated and extracted. The extract was subjected to a two-stage microscale fractionation strategy. The first stage involved pre-fractionation, followed by a refined second-stage fractionation using high-performance liquid chromatography (HPLC) to efficiently separate compounds.[4] Fractions were tested against human cancer cell lines, demonstrating bioactivity against HCT116 (colon cancer) and MCF-7 (breast cancer) cell lines. Taxonomic classification employed morphological evaluation and 16S rRNA phylogenetic analysis in a polyphasic approach.[5] These results will be combined with mass spectrometry and nuclear magnetic resonance analyses of the bioactive fraction for a robust dereplication process. This study highlights the potential of *Allinostoc* sp. as a source of bioactive compounds and microscale fractionation to assist natural product dereplication.

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