Cyanobacteria as a Source of Antifouling Agents: Optimizing Portoamides Production in Phormidium sp. LEGE 05292

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Résumé

Cyanobacteria have high biotechnological potential largely due to their broad environmental distribution and resulting chemodiversity. Portoamides, a class of cyclic peptides produced by *Phormidium* sp. LEGE 05292, have shown promising bioactivities across diverse fields, including allelopathy, cancer reseach, and more recently, antifouling applications (1).
Biofouling refers to the accumulation of organisms on submerged surfaces, leading to material degradation and substantial economic losses (2). Although some booster biocides like ECONEA®, are widely used to control biofouling, their high environmental toxicity has led to an urgent need for safer alternatives (3).

In this study, we aim to optimize the production of portoamides, by modifying growth conditions and refining purification methods. Growth conditions were modified by adjusting salinity, nitrate concentration, and light exposure. Biomass from each condition was harvested, lyophilized, and extracted for portoamides isolation. Final purification steps apply High-Performance Liquid Chromatography (HPLC) techniques, employing an improved method design to efficiently separate portoamides from chlorophyll and its derivatives, which typically co-elute.

This work is expected to enhance portoamides production and streamline their isolation process.

References:

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Mots-Clés: Cyanobacteria, bioactive compounds, antifouling, sustainable technologies