Exploring microalgal derivatives for antifouling application

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Introduction

Marine biofouling can be described as the natural colonization of submerged structures and surfaces [1], by a wide range of micro- and macro-organisms. It can represent serious economical and ecological hardships, that need to be prevented.

Antifouling strategies in use have failed to offer environmentally friendly solutions to this problem. The discovery of new and non-toxic anti-fouling compounds is of the outmost importance, and natural products extracted from marine organisms have already proven to be promising antifouling alternatives [2].

Results

![Figure 1. Antibacterial activity of microalgal extracts against Halomonas aquamarina (A), Cobetia marina (B), Vibrio harveyi (C) and Roseobacter litoralis (D)](image)

Anti-bacterial hits:
- **H. aquamarina**
  - 16854 (E)
  - 19984 (B to H)
- **C. marina**
  - 15824 (E)
  - 16734 (D, E)
  - 191004 (F).
- **V. harveyi**
  - 14699 (C)
  - 16745 (C)
- **R. litoralis**
  - 16854 (A)
  - 191004 (A)
  - 16726 (A)

No extract inhibited Pseudoalteromonas atlantica growth.

![Figure 2. Anti-settlement activity of microalgal extracts against Mytilus galloprovincialis larvae.](image)

Anti-settlement hits:
- 15824 (B, E)
- 14699 (C)
- 16854 (B).

Conclusions

Preliminary results indicated that eight of the tested microalgal extracts showed antibacterial activity and 3 anti-macrofouling activity. Fraction E of extract 15824 and fraction C of extract 14699 inhibited both bacterial growth and larvae adhesion, being more promising candidates to further explore as antifouling agents. Future work on extracts chemical characterization and bioactivity confirmation will be performed.

References


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