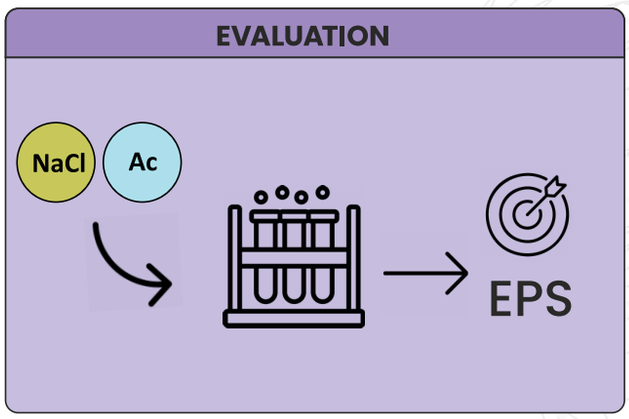
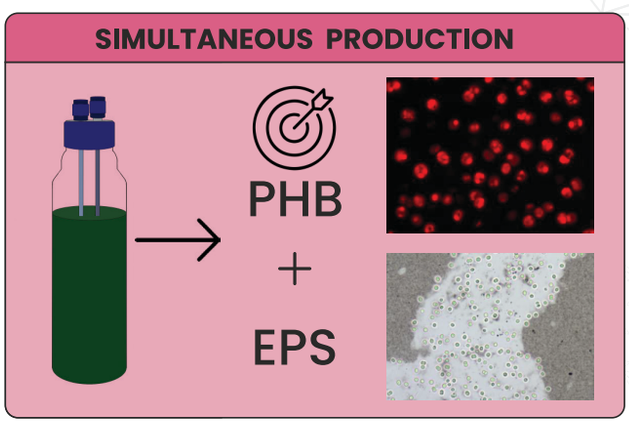
PROMICON

EXPLORING SIMULTANEOUS PRODUCTION OF POLY(3-HYDROXYBUTYRATE) AND EXOPOLYSACCHARIDES IN CYANOBACTERIA-RICH MICROBIOMES

Main message

- Cyanobacterial microbiomes are capable of consistent EPS production, even under varying environmental conditions.
- While acetate and salt can influence specific microbiomes, their overall impact on EPS synthesis is limited.
- The presence of uronic acid in EPS can be beneficial for biomass separation.*
- The visualization techniques are very important for the analysis of the polymers.





Objective

The aim of this study was to explore the viability of the dual production of poly(3-hydroxybutyrate) (PHB) and exopolysaccharides (EPS) by seven microbiomes rich in cyanobacteria.

Highlights

- Field microbiomes rich in cyanobacteria were evaluated for EPS production.
- Acetate and salt additions minimally affected EPS synthesis rates and composition.
- Glucose dominated as the main monosaccharide in microbiomes' polysaccharides.
- Staining revealed PHB granules in cyanobacteria and EPS around cells.
- Simultaneous 205 mg L^{-1} EPS and 87 mg L^{-1} PHB production was achieved in a 3 L photobioreactor.

* Relevant video: https://www.youtube.com/watch?v=KrI0emIdeTk&ab_channel=PROMICON

Source

Altamira-Algarra, B., García, J., Torres, C. A. V., Reis, M. A. M., & Flo, E. G. (2025). Exploring simultaneous production of poly(3-hydroxybutyrate) and exopolysaccharides in cyanobacteria-rich microbiomes. *New Biotechnology*, 87, 82-92. https://doi.org/10.1016/j.nbt.2025.02.008

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