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► **To cite this version:**

| Marwen Moussa. Extractive Fermentation to produce biobased molecules. 2024. hal-04494916

HAL Id: hal-04494916

<https://agroparistech.hal.science/hal-04494916>

Submitted on 7 Mar 2024

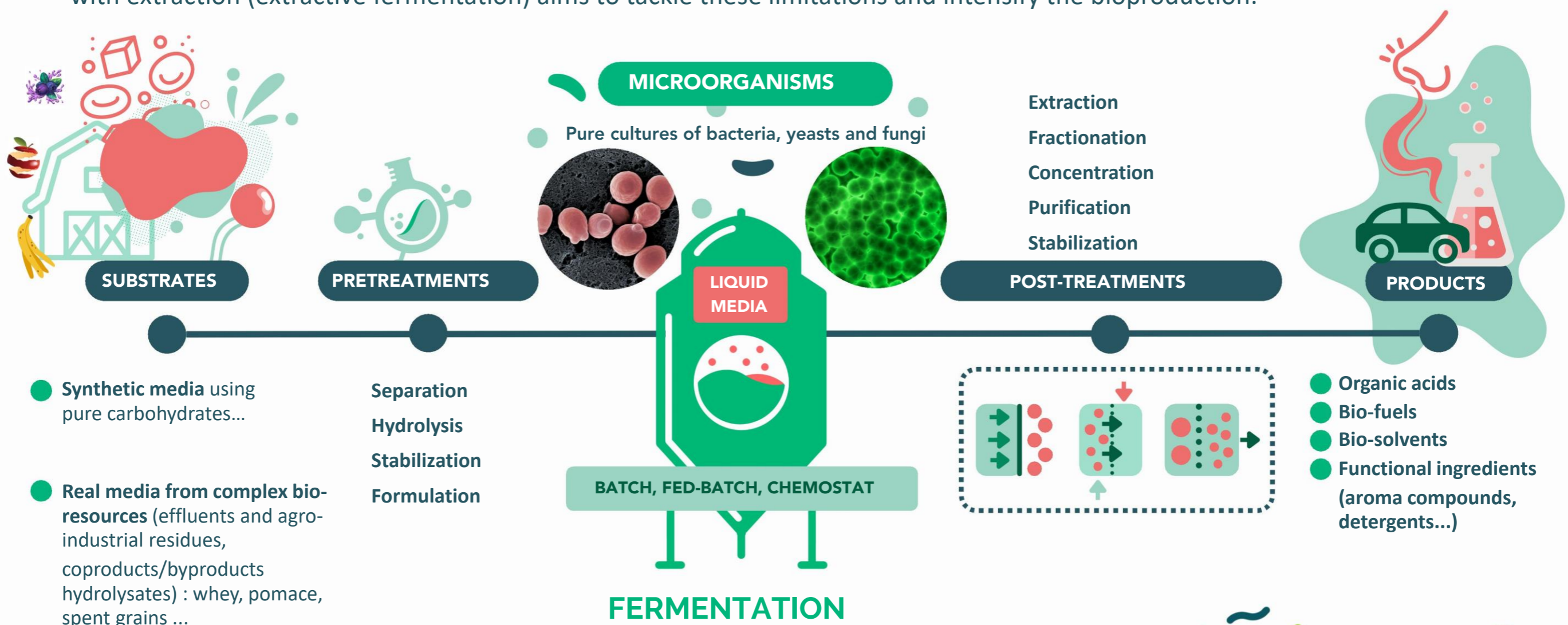
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Extractive Fermentation to produce biobased molecules

This research is part of the TRANSFeRMentation research group in INRAE's TRANSFORM department

Fermentation processes are a cornerstone of the bioeconomy. In order to develop robust processes for full scale industrial implementation, these must be combined with other pre/post-treatment steps and optimized within a multi-criteria approach. In the case of the bioproduction of a compound of interest by microbial routes, a recurring obstacle concerns the inhibitory effect induced by this compound and/or by its co-product on the producing microorganism. The integration of fermentation with extraction (extractive fermentation) aims to tackle these limitations and intensify the bioproduction.



Process engineering and integration

- Characterize the biobased substrates and products
- Characterize the physiological and bio-physical responses of microorganisms
- Understand, operate, optimize and eco-design the process
- Model the biological mechanisms, the separation mechanisms and their integrated process



MULTI-SCALE APPROACHES, TOWARDS A MULTICRITERIA OPTIMIZATION

Optimizing the bioreactors operation and maximizing the biological functionalities expression.

Study selective separation processes, understand and model the mechanisms that govern them, in order to optimize their performance.

Study extractive fermentation as a strategy for intensifying the bioprocesses, while minimizing utility consumption (energy, solvents, water), within a global approach of sustainable engineering.



INNOVATION PROSPECTS THROUGH EXTRACTIVE FERMENTATION

- Exploring the potential of new microorganisms and new bioreactor operations
- Valuing a wider range of bio-resources
- Better mastery of process integration towards a genericity of the developed methods
- Producing new biobased molecules

Contact us

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