Valorisation of bioactive proteins

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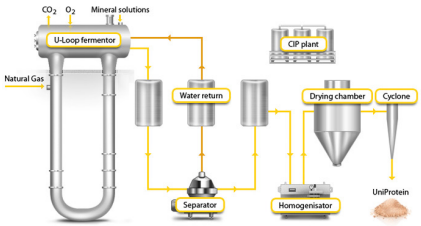
Introduction

World population will reach nearly 10 billion people by 2050 which pressures current food and feed systems[1].

Unibio, a Danish Biotech company, utilizes methanothropic bacteria to produce protein rich ingredients.



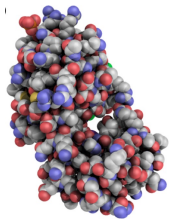
In this study, we examine the potential of exploring production streams as a source of higher value bioactive functional proteins/enzymes

[1] Ranganathan, J., et al. "How to Sustainably Feed 10 Billion People by 2050, in 21 Charts. 2018." Published: December 5 (2018)

Methods

Proteomics analysis based on LC-MS/MS of waste stream and downstream protein product.

In-silico analysis by homology modelling and Bioinformatics.

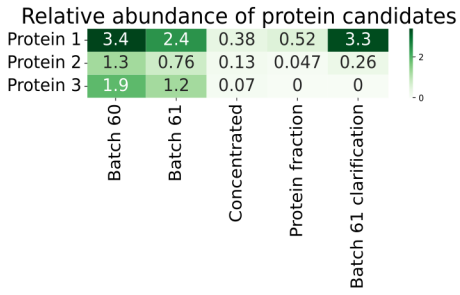


Enrichment of target proteins with pilot-scale filtration.

Techno-economic analysis of large scale process implementation.

Outcome

Three potential high-value proteins were identified and function predicted in-silico.



Enrichment strategies by concentrating and fractioning based on Molecular Weight was explored.

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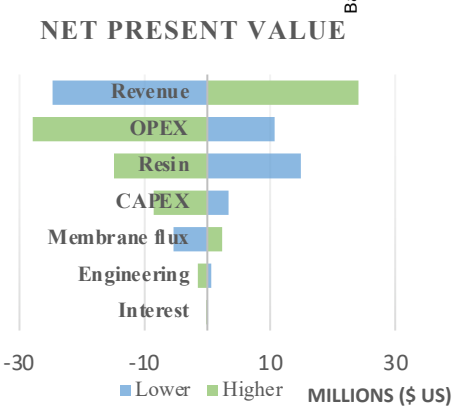
TEA evaluated profitability of six process configurations at large scale. One was profitable.



Perspectives

- R&D for in-vitro functional confirmation.
- Further exploration of co-extracting additional high-value proteins