



Filtering technologies for microalgae and sustainable highquality feed for fry



FIMAFY

Development of filtering technologies for microalgae and sustainable highfor fry. There is an urgent need for alternative resources to fishmeal and fish oil to produce fi the aquaculture industry. The resource problem is due to the rapid growth of aquacu fact that catches of fish for the feed industry are stagnating. The idea to use microa feed originated from an ongoing EU project, which demonstrates that algae can be processed water from the industry.

FIMAFY has employed strategies to provide a clear concept for microalgae up-and c processing, investigated the shelf-life stability of the dried biomass, and finally evalu biomass as a fish feed ingredient. Pre-Gasified industrial process water with a high c of ammonia and free from toxic compounds, representing effluent from a local biogc used as a low-price growth medium. In this study, an innovative downstream process developed. The process setup includes crossflow microfiltration (MF) by silicon carbid ceramic membranes, up -concentration by bowl centrifuge, and finally delicate dryir biomass by a novel swirl(spin) flash dryer. Harvest trials have been performed on eigh microalgae species

(Monodopsis subterranean, Nannochloropsis salina, Dunaliella salina, Phaeodactylu Chlorella Vulgaris, Chlorella sorokiniana, Chlorella pyrenoidosa, and Desmodesmuss

All the species showed the same flux pattern while the performance of the harvest w species-depended. The recovery efficiencies were higher or equal to 98%, while no c was observed. The filtration VCR (volume concentration ratio) for microalgae harvest between 10-30, depending on the species cell size, shape, and other parameters. Th have also been successfully tested on a large scale for *Nannochloropsis salina*. Energ consumption in this processing technology is estimated at 28% lower than known cur processing technologies applied to microalgae. These findings represent the SIC-UF membrane filtration as a robust and feasible technique for the downstream processi microalgae.

Participants

- BioMar A/S, Denmark
- LiqTech International A/S
- IFAU, Denmark
- Ecolipids A/S
- DTU Food
- DTU Aqua





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