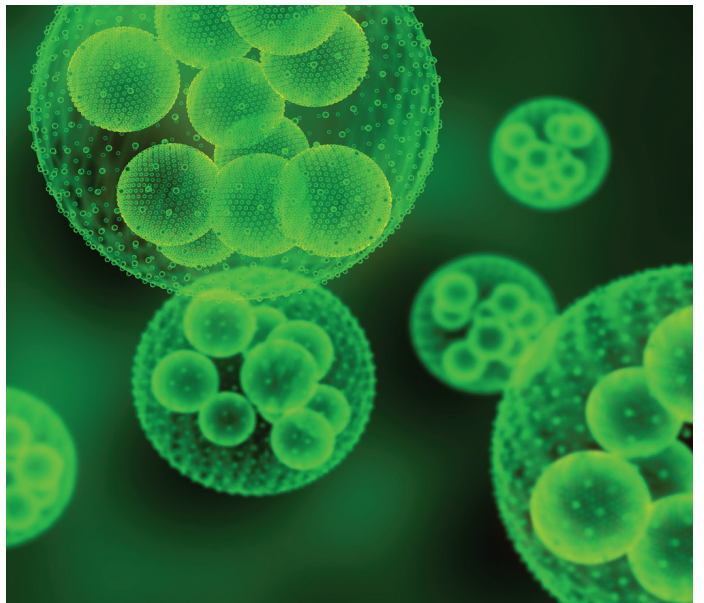


# Algae Extraction

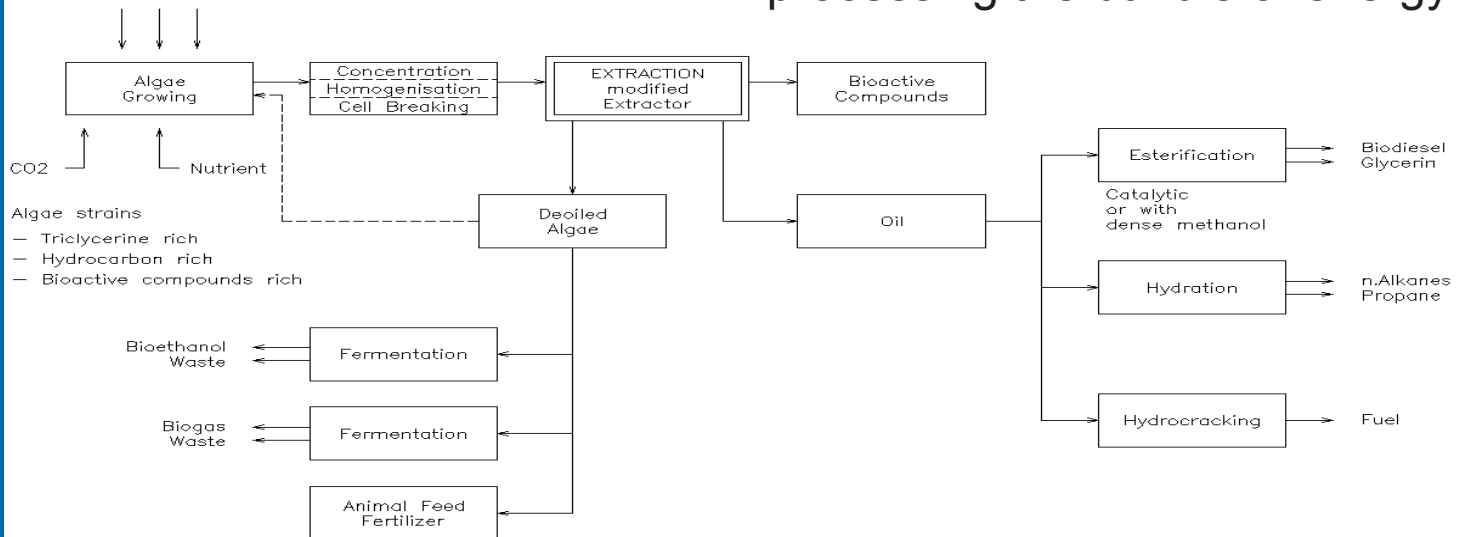


*a promising application for supercritical fluid extraction.....*

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## ....processing the bundle of energy

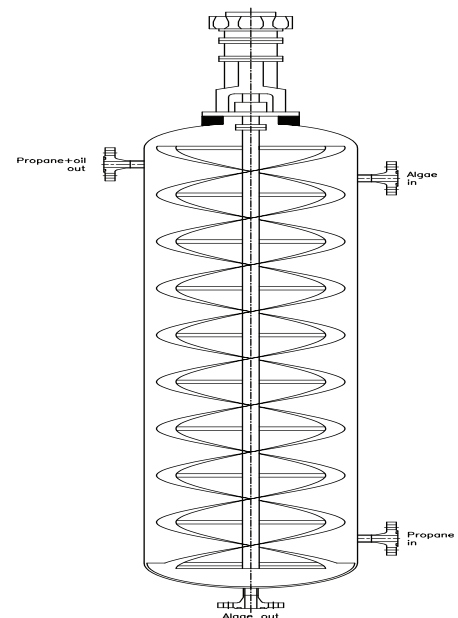


The extraction of algae aims to two different purposes, as an energetic source and for the production of astaxanthin and different nutraceuticals. As an energetic source the algae can be processed to retrieve oil, that later can be transformed in fuel. In this process the algae are concentrated and the oil is extracted with a thin-film equipment out of the liquid phase. The solvent for this process is an organic dense gas. Further NATEX is involved in a EC research project called „PUFA CHAIN“ project number 613.313 for detail research of the algae material and the utilization of algae extracts.

The modified thin-film extractor for algae slurry extraction is based on the current thin-film extractor used for viscous liquid. The process operates continuously, whereat the algae slurry is pumped into the top of the column and the extracted slurry is drained at the bottom of the column. The dense gas flows continuously from the bottom to the top and extracts the algae oil from the slurry.

For food purpose, especially for astaxanthin production, the algae species *heamatococcus* type is mainly used as raw material. The dried pre-treated pellets can be extracted by supercritical fluid extraction process with CO<sub>2</sub> to produce pure and solvent free extracts. The CO<sub>2</sub> process enables a clean production route to produce high concentrated astaxanthin extracts in one step. The CO<sub>2</sub> extraction of astaxanthin needs a lot of experience and higher operation pressure are necessary. For astaxanthin the CO<sub>2</sub> extraction process has proven as most successful production process.

modified  
thin-film extractor  
 $n=1-20\text{min}^{-1}$



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