Supercritical MeOH Extraction/Conversion One-step extraction conversion process for algal biofuels

**OCR Number:** OCR 6012

**Description:**

We have developed a more energy-efficient biodiesel production method from algae using a supercritical methanol system.

**Product Description**

Current production of biofuels from algae is hampered by the energy required to separate algae from water (via mechanical or chemical methods) and the wasted energy required to grow non-fuel parts of algae.

Yale has developed a technology that addresses these issues by providing an efficient system and **single-step** method for the extraction and transesterification of lipids from algae. The advantages of this system include the following:

1. By combining extraction and conversion in a single step, this process uses **70% less energy** than the previous methods.

2. Drying the algae feedstock is not necessary.

3. The output biodiesel product is the same as plant oil-based biodiesel.

4. A single procedure can be used to yield **high-value byproducts**, such as pigments and sterols, without the expense of normal purification protocols.
The one-step extraction process can be integrated into existing operations and provides a significant advantage in cost-competitive production of algae-based biofuels.

**Licensing Contact:** Richard Andersson  
richard.andersson@yale.edu