

Supplementary Information

Calculation of energy consumption in different steps of conventional transesterification method:

1. **Drying-** Power rating of hot air oven is 500W, when operated for 12h consumed about **6 kWh/kg biomass**
2. **Cell disruption-** Power requirement of sonicator is 125W, operated for 10 mins (0.17 h) to process 0.5g biomass,
Therefore, energy consumption= $(125W * 0.17h) / 0.5g$
= 42.5 kWh/kg biomass
3. **Lipid extraction-** Power requirement of lipid extractor is 125W, operated for 30min
Therefore, energy consumption= 0.0635 kWh for 1.8g biomass (300mg biomass in each of the 6 cups) i.e. **34.72 kWh/kg biomass**
4. **Transesterification-** Hot plate magnetic stirrer consumes **2.4 kWh/kg biomass** in 4 h with a power requirement of 600W

Total energy consumed in the process= **85.62 kWh**

Energy consumption in *In situ* transesterification method:

Drying step is bypassed and lipid extraction step is combined with transesterification.

Cell disruption step is same for both the processes.

Transesterification- Hot plate magnetic stirrer consumes **3.6 kWh/kg biomass** in 6 h with a power requirement of 600W

Total energy consumed in the process= **41.1 kWh**