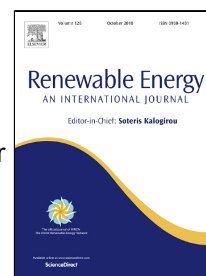


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Oleaginous yeast biomass flocculation using Bioflocculant produced in wastewater sludge and transesterification using petroleum diesel as a co-solvent



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1 **Oleaginous yeast biomass flocculation using Bioflocculant produced in wastewater sludge**  
2 **and transesterification using petroleum diesel as a co-solvent**

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5 **ABSTRACT:**

6 In this research a new process of harvesting the oleaginous yeast biomass (*Yarrowia lipolytica*)  
7 by flocculation followed by cell wall disruption and lipid extraction with petroleum diesel as a  
8 solvent was developed. Alum and calcium chloride along with the extracellular polymeric  
9 substance (EPS) as a flocculants were evaluated for lipid bearing biomass settling. The  
10 maximum flocculation activity of biomass using calcium chloride (36 mM) in combination with  
11 EPS (5.85 mg EPS/g biomass) or Alum (1.2mM) with EPS (18 mg EPS/g biomass) was 74.3 and  
12 79 % and the settling velocity was 2.93 and 1.46 mm/s, respectively. To have a similar efficiency  
13 of biomass settling, 3.07 times less dosage of EPS was required in combination with calcium  
14 chloride than required with Alum. Further, settled biomass (166g/L) was treated with N-lauroyl  
15 sarcosine (N-LS) to disrupt the cellular structure and release lipid. The released lipid was  
16 separated from cell debris and water using petroleum diesel (co-solvent) and maximum lipid  
17 recovery efficiency of  $94.7 \pm 1.2$  (w/w) was observed.

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