

**A study on effect environmental pH on volatile fatty acids and ethanol production using alginate by dark fermentation**

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Marine brown algae are regarded as one of the promising biomass for bioenergy production recently. Alginic acid which is the most abundant polysaccharide, approximately 40% (dry weight) includes a potential as feedstock for highly yielded biofuel production. However, on account of chemical structure, its low solubility and degradation are the main drawbacks for bioconversion (i.e., biofuels) in anaerobic fermentation. Thus, the aim this study is to determine environmental effect of operating pH on volatile fatty acids (VFAs) and ethanol production in anaerobic dark fermentation using alginate. Among the various parameters, pH is a key variable for the solubility of alginate solution.

VFAs profile (C2 to C6) was quantified using a Shimadzu 17A gas chromatograph with capillary column (Agilent Technologies, Inc., model HP-FFAP, 50 m x 0.32 mm x 0.50  $\mu$ m) with a flame ionization detector (FID).