

Bioethanol production from marine algae with the enzymatic pretreatment

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Biofuel production expansion is seen especially in agriculture producing countries such as U.S.A. and Brazil. However, it has drawn international attention due to global price increase of food stock. Therefore, possibility of utilizing unused cellulose from marine algae for biofuel has been studied. Marine algae contains a high percentage of water, possessing a lower production rate compared to land crops. Nonetheless, ethanol production potential is high, comparable to land crops, since productivity per area is high. In order to obtain bioethanol, kelp (belonging to macro algae) and *chlorella vulgaris* (belonging to micro algae) were used for the pretreatment and fermentation experiments. The pretreatment was carried out in two methods, chemical method and enzymatic method. Both of the different method performed, enzymatic method showed better for glucose production (6.3 and 10.7g L⁻¹ of glucose was produced by chemical method and enzymatic method, respectively). Batch fermentation was carried out with pretreated kelp and *chlorella vulgaris* media. After fermentation experiment, final ethanol concentration is 0.29 and 0.18 mg L⁻¹, respectively.