

Comparative studies on the alcohol types presence in *Gracilaria* sp. and rice fermentation using Sasad

Abstract

Alternative fuel sources such as biofuels are needed in order to overcome environmental problem caused by fossil fuel consumption. Currently, most biofuel are produced from land based crops and there is a possibility that marine biomass such as macroalgae can be an alternative source for biofuel production. The carbohydrate in macroalgae can be broken down into simple sugar through thermo-chemical hydrolysis and enzymatic hydrolysis. Dilute-acid hydrolysis was believed to be the most available and affordable method. However, the process may release inhibitors which would affect alcohol yield from fermentation. Thus, this work was aimed at investigating if it is possible to avoid this critical pre-treatment step in macroalgae fermentation process by using Sasad, a local Sabahan fermentation agent and to compare the yield with rice wine fermentation. This work hoped to determine and compare the alcohol content from *Gracilaria* sp. and rice fermentation with Sasad. Rice fermentation was found containing ethanol and 2 - methyl - 1 - propanol. Fermentation of *Gracilaria* sp. had shown the positive presence of 3 - methyl - 1 - butanol. It was found that Sasad can be used as a fermentation agent for bioalcohol production from *Gracilaria* sp. without the need for a pretreatment step. However further investigations are needed to determine if pre-treatment would increase the yield of alcohol.