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Galactose consuming microbes for ethanol production from seaweed

Abstract

Gracilaria sp. is one of macroalgae that contain high amount of sugar especially galactose. This galactose can be fermented into bioethanol by galactose-consuming microbes similar to the widely known ethanol production by yeast *S.cerevisae*. Hence the main objective of this study is to isolate galactose consuming microbes which capable of fermenting galactose into bioethanol. For this purpose, microbes-containing sample from seaweed culture were grown on galactose agar and tested for their survival as well as ethanol production capability. Seven isolated microbes belong to fungi and bacteria species were tested for their capability in fermenting galactose to produce ethanol. The concentrations of ethanol that have been produced by isolated microbes were analyzed by dichromate method whereas the consumption of galactose was determined by Dinitrosalicyclic acid (DNS) method. It was found that ethanol production resulted from fermentation by S1, S2, S3 and S4 were 0.80% (w/v), 0.74% (w/v), 0.81% (w/v) and 0.85% (w/v) respectively. Identification of these strains, as well as optimization of their ethanol fermentation are undergoing in our laboratory.

Keywords; Bacteria, Bioethanol, Fungi, Seaweed