Intisari

Saccharomyces cerevisiae galur NB1 dan Ag3 merupakan isolat yang mampu melakukan fermentasi etanol dengan substrat nira sorgum manis. Penelitian ini bertujuan untuk mengetahui kemampuan *Saccharomyces cerevisiae* NB1 dan Ag3 sebagai inokulum berulang hingga sepuluh siklus fermentasi *repeated-batch*. Fermentasi awal dilakukan selama 72 jam kemudian dilanjutkan dengan fermentasi *repeated-batch.* Pemanenan dan penambahan medium baru disebut sebagai teknik *drain and fill,* yang dilakukan dengan 50% volume fermentasi. Fermentasi dilakukan hingga sepuluh siklus, setiap siklus berlangsung selama 72 jam. Produksi CO_2 yang dipantau dengan metode manometri, kemudian hasil panen dianalisis kandungan etanol dengan metode *microdifussion conway.* Rerata laju evolusi CO_2 spesifik tertinggi pada galur Ag3 dengan substrat FS501 yaitu 0,247/jam. Produksi etanol tertinggi oleh *Saccharomyces cerevisiae* galur Ag3 dengan substrat FS501 pada siklus ke-10 sebesar 13,45% (v/v). Inokulum *Saccharomyces cerevisiae* galur Ag3 dengan substrat FS501 dapat digunakan sebagai inokulum berulang dalam fermentasi etanol.

Kata kunci : fermentasi etanol, nira sorgum manis, *repeated batch fermentation*

Abstract

Saccharomyces cerevisiae strains NB1 and Ag3 are isolates capable of ethanol fermentation using sweet sorghum juice as a substrate. This study aims to evaluate the ability of Saccharomyces cerevisiae NB1 and Ag3 as repeated inoculum for up to ten cycles of repeated-batch fermentation. Initial fermentation was conducted for 72 hours, followed by repeated-batch fermentation. Harvesting and addition of new medium, referred to as the drain and fill technique, was performed with 50% of the fermentation volume. Fermentation was carried out for ten cycles, each lasting 72 hours. Carbon dioxide production was monitored using the manometer method, and harvest results were analyzed for ethanol content using the microdiffusion method. The highest average specific carbon dioxide evolution rate was observed in strain Ag3 with FS501 juice at 0.247/hour. The highest ethanol production was achieved by Saccharomyces cerevisiae strain Ag3 with FS501 juice in the 10th cycle at 13.45% (v/v). Inoculum Saccharomyces cerevisiae strain Ag3 with FS501 juice can be used as repeated inoculum in ethanol fermentation up to the tenth cycle.

Keyowrd: ethanol fermentation, sweet sorghum juice, repeated batch fermentation