

Saccharomyces cerevisiae galur S1 dan SW14 merupakan isolat yang mampu melakukan fermentasi etanol secara *repeated-batch*. Penelitian ini bertujuan untuk mengetahui kemampuan *Saccharomyces cerevisiae* S1 dan SW14 sebagai inokulum berulang hingga sepuluh siklus fermentasi *repeated-batch*. Inokulum *Saccharomyces cerevisiae* dinormalisasikan pada $OD_{600} = 0,2$. Fermentasi awal dilakukan selama 72 jam kemudian dilanjutkan dengan fermentasi *repeated-batch*. Sebanyak 100 mL hasil fermentasi dipanen kemudian ditambahkan medium baru sebanyak 100 mL. Pemanenan dan penambahan medium baru disebut sebagai teknik *drain and fill*, yang dilakukan secara berulang. Fermentasi dilakukan hingga sepuluh siklus, setiap siklus berlangsung selama 72 jam. Fermentasi diamati melalui produksi karbon dioksida yang dipantau dengan metode manometri, serta hasil panen yang dianalisis kandungan etanolnya dengan metode *microdifussion*. Laju evolusi karbon dioksida spesifik serta produksi etanol *S. cerevisiae* galur S1 dan SW14 mengalami penurunan setelah awal fermentasi. Laju evolusi karbon dioksida spesifik tertinggi berturut-turut 0,069237/jam dan 0,063964/jam. Produksi etanol tertinggi oleh *Saccharomyces cerevisiae* galur S1 ada pada siklus ke-5 sebesar 7,012% (v/v) dan galur SW14 pada siklus ke-4 sebesar 6,915% (v/v). *Saccharomyces cerevisiae* galur S1 dapat digunakan sebagai inokulum berulang dalam fermentasi etanol hingga siklus kesepuluh dan galur SW14 hingga siklus kesembilan.

Kata kunci: fermentasi etanol, inokulum berulang, *Saccharomyces cerevisiae*

Saccharomyces cerevisiae S1 and SW14 have been used in repeated-batch fermentation. This study is aimed to know the potency of *Saccharomyces cerevisiae* S1 and SW14 as repeated inoculum until tenth cycles of ethanol fermentation. *Saccharomyces cerevisiae* was inoculated with an absorbance value of 0.2 at a wavelength of 600nm at the beginning of fermentation. The beginning of fermentation is carried out in 72 hours and continued with repeated-batch fermentation. Fermentation products as much as 100 mL are harvested and 100 mL of new medium is added to the fermentor for the next cycle of fermentation. The process of harvesting and adding new medium is called drain and fill fermentation, which is conductive repetitively. There are 10 cycles of repeated-batch ethanol fermentation that is carried out in 72 hours. Fermentation is observed by the production of carbon dioxide with a manometric method and the product of fermentation is also analyzed with microdiffusion method to check the ethanol. Specific carbon dioxide evolution rate and ethanol production decrease after the beginning of fermentation. The highest specific carbon dioxide evolution rates are 0.069237/hour and 0.063964/hour. The highest ethanol production by *Saccharomyces cerevisiae* S1 occurred in the fifth cycle in the amount of 7.012% (v/v) and SW14 in the fourth cycle in the amount of 6.915% (v/v). *Saccharomyces cerevisiae* S1 can be used as repeated inoculum in repeated-batch ethanol fermentation until the tenth cycle and SW14 until ninth cycle.

Key words: ethanol fermentation, repeated-batch, *Saccharomyces cerevisiae*