

Abstrak

Penelitian ini mengenai pemurnian bioetanol hasil fermentasi ubi kayu dengan metode destilasi secara diskontinyu dan adsorpsi secara *flow system*. Penelitian ini bertujuan untuk mendapatkan metode *flow system* purifikasi bioetanol hasil fermentasi ubi kayu menggunakan dual adsorben (KS-CuSO₄), mengetahui kadar bioetanol yang dihasilkan dari proses adsorpsi dengan metode *flow system*, mengetahui kapasitas adsorpsi dual adsorben (KS – CuSO₄) dalam proses purifikasi bioetanol dengan cara adsorpsi metode *flow system* dan mengetahui randemen bioetanol hasil purifikasi. Metode *flow system* purifikasi bioetanol hasil fermentasi dibagi ke dalam 2 tahap, yaitu 3 kali destilasi secara diskontinyu dan 2 kali adsorpsi secara *flow system*. Dari hasil fermentasi didapatkan kadar bioetanol 10%, dari hasil proses destilasi ke-1 didapatkan kadar bioetanol 14 %, dari hasil proses destilasi ke-2 didapatkan kadar bioetanol 50,2% dan dari hasil proses destilasi ke-3 didapatkan kadar bioetanol 86,6%. Bioetanol hasil destilasi ke-3 diadsorpsi sebanyak 2 kali menggunakan dual adsorben (KS-CuSO₄) secara *flow system*. Dari proses adsorpsi ke-1 didapatkan kadar etanol rata-rata sebesar 95,5% sedangkan untuk proses adsorpsi ke-2 didapatkan kadar etanol rata-rata 99,9907%. Untuk satu sel, kapasitas sel adsorpsi dual adsorben (KS-CuSO₄) sebanyak ± 1 L dari hasil destilasi ke-3 dengan waktu adsorpsi selama ± 5 jam. Dari hasil pembuatan bioetanol dari 50 L larutan hasil fermentasi dihasilkan bioetanol dengan kadar rata-rata 99,9907% dengan randemen bioetanol yang dihasilkan sebesar 2,00%.

Kata Kunci: Purifikasi, Dual Adsorben (KS–CuSO₄), Bioetanol, Purifikasi, Destilasi Diskontinyu dan *Flow System*

Abstract

This study on the purification of fermented cassava bioethanol to be discontinuous distillation method and adsorption in a flow system. The purpose of this study to get a method of flow system purification bioethanol from fermented cassava using dual adsorbents (KS - CuSO₄), to get a levels of bioethanol produced by the method of adsorption flow system process, to get information of adsorption capacity adsorbents (KS - CuSO₄) in the purification process of bioethanol by the method of adsorption flow system and to get information of bioethanol purification results. The method of purification flow system bioethanol fermented divided into two stages. The first stage with 3 times discontinuous distillation and the second stage with 2 times adsorption with flow system. Bioethanol levels from the fermentation of 10%, bioethanol levels from the first distillation of 14 %, bioethanol levels from the second distillation of 50,2 % and bioethanol levels from the third distillation of 86.6%. Bioethanol results from third distillation adsorbed 2 times using adsorbents (KS - CuSO₄) by the flow system method. Bioethanol levels from the first stage adsorption on average by 95,5% while bioethanol levels for the second stage on average by 99,9907%. For a single cell, capacity of cells dual adsorbent (KS - CuSO₄) as much as ± 1 L of the third stage distillation with a time of adsorption for ± 5 hours. The results of bioethanol production from 50 L solution produced bioethanol fermentation results with levels of 99.9915% with random bioethanol produced at 2.00%.

Keywords: Purification, Dual Adsorbent (KS - CuSO₄), Bioethanol, Discontinuous Distillation and Flow System



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METODE FLOW SYSTEM PURIFIKASI BIOETANOL HASIL FERMENTASI BI KAYU MENGGUNAKAN DUAL ADSORBEN (KS-CUSO₄)

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