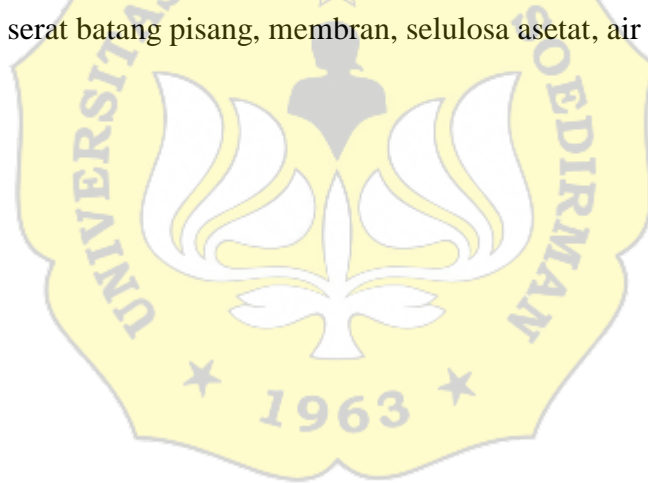


ABSTRAK

Pada penelitian ini, telah dilakukan penurunan kadar besi (Fe) dalam air sumur dengan penyaringan menggunakan membran selulosa asetat (SA) yang diperoleh dari proses pulping serat batang pisang; kemudian dilakukan asetilasi melalui 4 tahap yaitu aktivasi, asetilasi, hidrolisis, dan pemurnian. Jenis selulosa asetat yang dihasilkan merupakan selulosa diasetat dengan kadar asetil yang sebesar 37,31%. Hasil analisis *Fourier Transform Infra Red* (FTIR) menunjukkan adanya serapan gugus karbonil (C=O) pada $1751,36\text{ cm}^{-1}$ dan serapan gugus asetil (C-O) pada $1242,16\text{ cm}^{-1}$. Pembuatan membran dilakukan dengan penambahan aditif polistirena (PS) dan polietilen glikol (PEG) sebagai pembanding membran tanpa aditif. Hasil fluks air yang diperoleh untuk membran SA dan membran SA-PS-PEG yaitu $20,21\text{ L}/(\text{m}^2\cdot\text{jam})$ dan $24,00\text{ L}/(\text{m}^2\cdot\text{jam})$. Hasil fluks sampel air sumur membran SA dan membran SA-PS-PEG yaitu $17,69\text{ L}/(\text{m}^2\cdot\text{jam})$ dan $22,74\text{ L}/(\text{m}^2\cdot\text{jam})$. Pengukuran persentase penurunan kadar Fe dengan Spektrofotometer Serapan Atom (AAS) menggunakan membran SA dan membran SA-PS-PEG berturut-turut yaitu 99,88% dan 99,25%.

Kata Kunci : serat batang pisang, membran, selulosa asetat, air sumur, besi (Fe).



ABSTRACT

In this research, the content (levels) of Iron (Fe) in ground water can be reduced by filtration using cellulose acetate (CA) membrane obtained from the pulping process of banana stem fiber; then, the next step is acetylation process through 4 steps consisting of the activation, acetylation, hydrolysis, and purification process. The type of cellulose acetate produced was cellulose diacetate with the contents (rate) of acetyl 37.31%. The result of Fourier Transform Infra Red (FTIR) analysis shows the absorption of carbonyl group (C=O) at 1751.36 cm^{-1} and the absorption of acetyl group (C-O) at 1242.16 cm^{-1} . The membrane was prepared by additive addition of polystyrene (PS) and polyethylene glycol (PEG); and non-additive membrane as a comparator. The water flux values of CA membrane and CA-PS-PEG membrane were $20.21\text{ L}/(\text{m}^2\cdot\text{hour})$ and $24.00\text{ L}/(\text{m}^2\cdot\text{hour})$. The ground water flux values of CA membrane and CA-PS-PEG membrane were $17.69\text{ L}/(\text{m}^2\cdot\text{hour})$ and $22.74\text{ L}/(\text{m}^2\cdot\text{hour})$. Measurement of percentage decrease of iron content with Atomic Absorption Spectrophotometer (AAS) using CA membrane and CA-PS-PEG membrane were 99.88% and 99.25% respectively.

Keyword :banana steam fiber, cellulose acetate, ground water, iron (Fe), membrane.

