

INTISARI

Fabrikasi Membran Nanofiber *Polysulfone* (PSF)/*Polyethylene Oxide* (PEO) Terhadap Potensinya Sebagai Biomaterial

Oleh

Rahmadian Muhendar

(18/430222/PA/18735)

Membran nanofiber memiliki potensi untuk diaplikasikan dalam berbagai bidang khususnya bidang biomedis. Membran nanofiber *Polysulfone* (PSF) dan *Polyethylene Oxide* (PEO) difabrikasi dengan metode *electrospinning* untuk aplikasi dalam bidang biomedis. Membran nanofiber PSF/PEO dibuat dengan larutan PSF konsentrasi 12 wt% dan larutan PEO konsentrasi 4 wt%. Membran PSF/PEO dikarakterisasi dengan *Scanning Electron Microscopy* (SEM), dilakukan uji sudut kontak dengan metode *sessile drop* untuk mengetahui sifat keterbasahan permukaan membran, dan uji *swelling* dengan larutan *Phosphate Buffered Saline* (PBS). Morfologi optimal terdapat pada membran nanofiber PSF/PEO 25/75 diperoleh diameter rata-rata (277 ± 2) nm. Uji sudut kontak yang diperoleh menunjukkan semakin besar rasio volume PEO maka semakin kecil sudut kontak membran. Hasil *swelling* optimal terdapat pada membran PSF/PEO 75/25 berdasarkan ketahanannya terhadap *swelling* dan didapatkan nilai derajat *swelling* $(4,3 \pm 0,4) \times 10^2$ %. Berdasarkan penelitian ini diperlukan pengujian lebih lanjut terkait uji *in vitro* MTT assay untuk mendapatkan hasil yang lebih komprehensif terkait biokompatibilitas material tersebut.

Kata kunci: Nanofiber, Elektrospinning, *Polysulfone* (PSF), *Polyethylene Oxide* (PEO), *Scanning Electron Microscopy*, *Sessile Drop*, *Swelling*

ABSTRACT

Fabrication Of Polysulfone (PSF)/ Polyethylene Oxide (PEO) Nanofiber Membrane and Its Prospect as Biomaterials

By:

Rahmadian Muhendar

(18/430222/PA/18735)

Nanofiber membranes have the potential to be applied in various fields, especially the biomedical field. *Polysulfone* (PSF) and *Polyethylene Oxide* (PEO) nanofiber membranes were fabricated using the *electrospinning* method for applications in the biomedical field. The PSF/PEO nanofiber membrane was made using a solution of PSF with a concentration of 12 wt% and a solution of PEO with a concentration of 4 wt% using the electrospinning method. The PSF/PEO membrane was characterized using a *Scanning Electron Microscopy* (SEM), a contact angle test was performed using the *sessile drop* method, and a *swelling* test using *Phosphate Buffered Saline* PBS solution. The optimal morphology is found in the PSF/PEO 25/75 nanofiber membrane with an average diameter (277 ± 2) nm. The contact angle test obtained shows that the greater the PEO volume ratio, the smaller the membrane contact angle. The optimal *swelling* results are found in the PSF / PEO 75/25 membrane based on its resistance to *swelling* and obtained the degree of *swelling* $(4.3 \pm 0.4) \times 10^2\%$. Based on this research, further testing is needed related to the *in vitro* test of *MTT assay* to obtain more comprehensive results related to the biocompatibility of the material.

Kata kunci: Nanofiber, Electrospinning, *Polysulfone* (PSF), *Polyethylene Oxide* (PEO) *Electrospinning*, *Scanning Electron Microscopy*, *Sessile Drop*, *Swelling*