

INTISARI

Lidah buaya dan kitosan memiliki sifat anti-bakteri. Dengan demikian, mereka berpotensi digunakan untuk aplikasi biomedis seperti pembalut luka dan penyembuhan luka. Penelitian ini bertujuan untuk mempelajari sifat morfologi dan tarik AVG / PVA dan AVG/ CS / PVA membran dengan memvariasikan komposisi AVG, kitosan dan PVA.

Ada empat spesimen membran nanofiber yang digunakan dalam penelitian ini yaitu: PVA murni, AVG (2%)/PVA, AVG (2%)/CS (8%)/PVA, dan AVG (2%)/CSNE (8%)/PVA. Membran nanofiber dibuat dengan metode elektrospinning pada tegangan DC 18kV, TCD (Tip to Collector Distance) 16,5 cm, dan diameter jarum 0,6 mm. Viskositas dari semua larutan *spinning* sebelum proses elektrospinning diukur dengan viscometer. Morfologi membran dikarakterisasi menggunakan *Scanning Electron Microscope* (SEM) dan Uji tarik membran dilakukan mengacu pada ASTM D882.

Hasil penelitian menunjukkan bahwa penambahan AVG ke dalam PVA menghasilkan diameter serat yang lebih tinggi dari membran AVG 2%/PVA (194,3 nm) dibandingkan dengan membran PVA (175,6 nm). Diameter serat AVG (2%)/CS (8%)/PVA dan AVG (2%)/CSNE (8%)/PVA masing-masing adalah 188,2 nm dan 158,5 nm. Penambahan AVG dan kitosan meningkatkan sifat tarik membran dimana kekuatan tarik tertinggi dicapai oleh membran AVG (2%)/CSNE (8%)/PVA menunjukkan bahwa penambahan CSNE menurunkan diameter serat dan secara signifikan meningkatkan kekuatan tarik membran dan termasuk dalam kisaran sifat kulit asli.

Kata kunci : *Aloe Vera*, kitosan, elektrospinning, nanofiber, sifat tarik, SEM.

ABSTRACT

Aloe vera and chitosan have anti-bacterial property. Thus, they are potentially used for biomedical application such as wound dressing and wound healing. This research aims to study the morphology and tensile properties of AVG, chitosan, and PVA.

There are four nanofiber membrane specimens used in this research: i.e. neat-PVA, AVG (2%)/PVA, AVG (2%)/CS (8%)/PVA, and AVG (2%)/CSNE (8%)/PVA. The nanofiber membranes were prepared by electrospinning method at high DC voltage 18kV, TCD (Tip to Collector Distance) 16,5 cm, and needle diameter 0,6 mm. The viscosity of all spinning solutions before electrospinning process was measured with a viscometer. The morphology of the membranes was characterized by Scanning Electron Microscope (SEM) and tensile test of the membranes was conducted refer to ASTM D882.

The results showed that the addition of AVG into PVA resulted in higher fiber diameter of the AVG (2%) /PVA membrane (194,3 nm) than that of PVA membrane (175,6 nm). The fiber diameter of AVG (2%)/CS (8%)/PVA and AVG (2%)/CSNE (8%)/PVA are 188,2 nm and 158,5 nm, respectively. The addition of AVG and chitosan increased the tensile properties of the membranes in which the highest tensile strength reached by AVG (2%)/CSNE (8%)/PVA membranes indicating that the addition of CSNE decreased the fiber diameter and significantly improved the tensile strength of the membrane, and included in the range of the native skin properties.

Key Word : Aloe Vera, chitosan, electrospinning, nanofiber, tensile strength, SEM