

## INTISARI

### MEMBRAN ANTIBAKTERI BERBASIS *NANOFIBER* PVA/*MOMORDICA CHARANTIA* SEBAGAI PEMBALUT LUKA

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Telah dilakukan penelitian terkait penambahan ekstrak *Momordica Charantia* yang dikombinasikan dengan *nanofiber polyvinyl alcohol* (PVA) yang bertujuan untuk menganalisis pengaruh penambahan ekstrak MC terhadap morfologi dan gugus fungsi juga aktivitas antibakterinya sehingga berpotensi sebagai pembalut luka. Penelitian ini memfabrikasi nanofiber PVA, PVA/MC dengan variasi konsentrasi MC sebesar 5%, 10%, 15% dan 20% dengan metode *electrospinning*. Sampel nanofiber kemudian dikarakterisasi dan uji. Hasil karakterisasi SEM menunjukkan morfologi *nanofiber* PVA yang halus dan seragam. Pembentukan manik-manik (*beads*) secara bertahap meningkat dengan meningkatnya konsentrasi MC dalam larutan PVA. Nilai rata-rata diameter *nanofiber* meningkat dengan meningkatnya konsentrasi MC. Hasil karakterisasi FTIR menunjukkan adanya gugus fungsi yang identik dari MC pada *nanofiber* PVA/MC yang mengindikasikan keberhasilan penambahan senyawa bioaktif ekstrak MC ke dalam *nanofiber*. Pengujian aktivitas antibakteri menggunakan metode *disk diffusion* dan hasilnya *nanofiber* PVA/MC menunjukkan aktivitas antibakteri dengan adanya zona hambat yang lebih efektif terhadap bakteri gram negatif (*E. coli*) dibandingkan bakteri gram positif (*S. Aureus*). Nanofiber PVA/MC 20% menunjukkan zona hambat yang paling lebar yaitu  $3,4 \pm 0,2$  mm pada bakteri gram negatif (*E. coli*) dan  $2,50 \pm 0,06$  mm pada bakteri gram positif (*S. Aureus*). Berdasarkan hasil tersebut, *nanofiber* PVA/MC berpotensi sebagai pembalut luka.

Kata kunci: Antibakteri, *Momordica Charantia*, *nanofiber*, pembalut luka

## ABSTRACT

### ***PVA/MOMORDICA CHARANTIA NANOFIBER BASED ANTIBACTERIAL MEMBRANE AS WOUND DRESSING APPLICATIONS***

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Research has been conducted related to the addition of Momordica Charantia extract combined with polyvinyl alcohol (PVA) nanofiber which aims to analyze the effect of the addition of MC extract on morphology and functional groups as well as its antibacterial activity so that it has the potential as a wound dressing. This study fabricated PVA nanofiber, PVA/MC with variation of MC concentration of 5%, 10%, 15% and 20% by electrospinning method. The nanofiber samples were then characterized and tested. The nanofiber samples were then characterized and tested. SEM characterization results showed a smooth and uniform morphology of PVA nanofiber. The formation of beads gradually increased with increasing MC concentration in PVA solution. The average value of nanofiber diameter increased with increasing MC concentration. The results of FTIR characterization showed the presence of identical functional groups of MC in PVA/MC nanofiber, indicating the successful addition of bioactive compounds of MC extract into nanofiber. Antibacterial activity testing using the disk diffusion method and the results showed that PVA/MC nanofiber showed antibacterial activity with a zone of inhibition that was more effective against gram negative bacteria (*E. coli*) than gram positive bacteria (*S. Aureus*). The 20% PVA/MC nanofiber showed the widest inhibition zone of  $3.4 \pm 0.2$  mm on gram-negative bacteria (*E. coli*) and  $2.50 \pm 0.06$  mm on gram-positive bacteria (*S. Aureus*). Based on these results, PVA/MC nanofiber has potential as a wound dressing.

Keyword: Antibacterial, Momordica Charantia, nanofiber, wound dressing