

INTISARI

Wound dressing yang ideal harus biokompatibel, porositas dan permeabilitas yang baik, serta memiliki daya antibakteri. *Wound dressing* konvensional seperti *dressing* kasa memiliki banyak kekurangan, yaitu kelembaban kurang, nyeri atau traumatik saat pergantian, dan mudah terkontaminasi bakteri sehingga proses penyembuhan luka lebih lama. *Wound dressing* nanofiber memenuhi karakteristik *wound dressing* yang ideal sehingga mempercepat penyembuhan luka. Salah satu tumbuhan yang telah terbukti mendukung proses penyembuhan luka adalah ekstrak daun kelor. Penelitian ini bertujuan untuk membandingkan jumlah fibroblas, kepadatan kolagen, dan laju penutupan luka pada penggunaan *wound dressing* nanofiber ekstrak daun kelor dan *dressing* kasa *saline*.

Pengujian jumlah fibroblas, kepadatan kolagen, dan laju penutupan luka dilakukan dengan membuat luka eksisi pada tikus. Bekas luka tikus kemudian dibuatkan sediaan histologis. Perhitungan jumlah fibroblas dengan pengamatan menggunakan mikroskop pada enam lapang pandang dengan pewarnaan hemaktosilin-eosin. Pengamatan kepadatan kolagen pada lima lapang pandang dengan perbesaran 400x pada area retikuler dermis menggunakan aplikasi *imageJ*. Sedangkan laju penutupan luka diukur menggunakan milimeter blok dan diolah dengan aplikasi *imageJ*. Data hasil penelitian dianalisis dengan uji *two-way anova*, kemudian dilanjutkan dengan uji *Post Hoc Least Significant Difference* (LSD).

Hasil penelitian menunjukkan jumlah fibroblas antar kelompok *dressing* terdapat perbedaan yang tidak signifikan. Kepadatan kolagen dan laju penutupan antar kelompok *dressing* menunjukkan perbedaan yang signifikan. Sementara itu hasil penelitian menunjukkan terdapat perbedaan yang signifikan antar waktu pengamatan pada setiap kelompok *dressing* baik pada variabel jumlah fibroblas, kepadatan kolagen dan laju penutupan luka. Kesimpulan dari penelitian ini adalah aplikasi *wound dressing* nanofiber ekstrak daun kelor dapat meningkatkan jumlah fibroblas, kepadatan kolagen, dan laju penutupan luka pasca eksisi kulit.

Kata Kunci : daun kelor, fibroblas, kolagen, nanofiber, penutupan luka.

ABSTRACT

An ideal wound dressing must be biocompatible, have good porosity and permeability, and have antibacterial properties. Conventional wound dressings such as gauze dressings have many drawbacks, namely lack of moisture, pain, or trauma when changing, and are easily contaminated with bacteria so the wound healing process takes longer. Nanofiber wound dressing meets the ideal characteristics of a wound dressing to accelerate wound healing. One plant that has been proven to support the wound healing process is Moringa leaf extract. This study aims to compare the number of fibroblasts, collagen density, and rate of wound closure in the use of moringa leaf extract nanofiber wound dressings and saline gauze dressings.

Tests for the number of fibroblasts, collagen density, and the rate of wound closure were carried out by making excision wounds on rats. The rat scars were then made into histological preparations. Calculation of the number of fibroblasts by observing using a microscope in six fields of view with hematoxylin-eosin staining. Observation of collagen density in five visual fields with 400x magnification in the reticular area of the dermis using the ImageJ application. Meanwhile, the rate of wound closure was measured using millimeter blocks and processed using the ImageJ application. The research data were analyzed using a two-way ANOVA test, then followed by the Post Hoc Least Significant Difference (LSD) test.

The results showed that there was no significant difference in the number of fibroblasts between the dressing groups. Collagen density and rate of closure between the dressing groups showed significant differences. Meanwhile, the results of the study showed that there were significant differences between the observation times in each dressing group both in the variable number of fibroblasts, collagen density, and rate of wound closure. This study concludes that the application of moringa leaf extract nanofiber wound dressing can increase the number of fibroblasts, collagen density, and the rate of wound closure after skin excision.

Keywords: *Moringa oleifera*, fibroblasts, collagen, nanofiber, wound closure.