

INTISARI

Latar Belakang: Pemberian terapi tambahan pada periodontitis secara lokal mampu meningkatkan kadar obat di dalam poket sehingga terapinya lebih efektif, salah satunya menggunakan nanofiber. Sebagai penghantar obat nanofiber dapat menghantarkan berbagai macam obat secara *controlled release* (lepas terkontrol) dan dapat dibuat menggunakan obat kimia maupun herbal, seperti ekstrak tanaman kelor (*Moringa oleifera* Lam.). Tanaman ini memiliki khasiat antimikroba, anti inflamasi dan dapat mempercepat penyembuhan luka sehingga memiliki potensi dalam pengobatan periodontitis. Tujuan penelitian ini adalah untuk mengetahui pengaruh penambahan ekstrak daun kelor 5%, 10%, dan 15% terhadap *drug release* nanofiber.

Metode: Persiapan dilakukan pembuatan ekstrak daun kelor 5%, 10%, dan 15% dan pembuatan larutan polimer kitosan-*poly vinyl alcohol* (PVA). Selanjutnya pada penelitian larutan polimer dicampur dengan ekstrak masing-masing 8 sampel, lalu di-elektrospining dengan parameter tegangan listrik 10kV, diameter 22 G dan laju larutan 0,1 ml/jam. Nanofiber kemudian dimasukkan ke dalam *Phosphate Buffer Saline* (PBS) yang diuji pada 1 hari, 2 hari, dan 3 hari. Kadar ekstrak daun kelor dalam sampel diuji dengan parameter flavonoid menggunakan alat *uv-vis spectrophotometer*.

Hasil: Nanofiber dengan ekstrak daun kelor 10% menunjukkan *drug release* yang lebih baik signifikan ($p < 0,05$) dibandingkan nanofiber dengan ekstrak 5% maupun pada 15%, baik pada hari ke-1, ke-2, dan ke-3.

Kesimpulan: Penambahan ekstrak daun kelor pada polimer kitosan-PVA mempengaruhi *drug release* nanofiber tersebut.

Kata kunci : daun kelor, kitosan, PVA, nanofiber, *drug release*

ABSTRACT

Background: Local administration of adjunctive therapy in periodontitis can increase the drug levels in the pocket so that the therapy is more effective, one is by using nanofiber. As a drug carrier nanofiber can deliver a variety of drugs in a controlled manner and can be made using chemical or herbal medicines, such as kelor (*Moringa oleifera* Lam.) extract. This plant has antimicrobial and anti-inflammatory properties and can accelerate wound healing so it has potential in the treatment of periodontitis. The purpose of this study was to determine the effect of addition of 5%, 10%, and 15% Moringa leaf extract to nanofiber's drug release.

Method: Preparation was done by preparing 5%, 10%, and 15% kelor leaf extract and preparation of chitosan-poly vinyl alcohol (PVA) polymer solution. Furthermore, in research stage the polymer solution was mixed with each extract as much as 8 samples, then electrospun with parameters 10kV voltage, 22 G diameter and feed rate 0.1 ml / hour. Nanofiber is then incorporated into Phosphate Buffer Saline (PBS) tested on 1 day, 2 days, and 3 days. Levels of Moringa leaf extract in the sample were tested with flavonoid parameters using a uv-vis spectrophotometer.

Results: Nanofiber with 10% kelor leaf extract showed a significantly better drug release ($p < 0.05$) than nanofiber with 5% extract as well as at 15%, both on the 1st, 2nd and 3rd days.

Conclusion: The addition of kelor leaf extract to chitosan-PVA polymer affects the nanofiber's drug release.

Keyword : kelor leaves, chitosan, PVA, nanofiber, drug release