

BAB 5

KESIMPULAN DAN SARAN

5.1. Kesimpulan

Berdasarkan hasil kajian pustaka secara sistematis terhadap artikel ilmiah yang diterima mengenai mekanisme penyembuhan luka bakar dari golongan senyawa kimia yang terkandung dalam tanaman *Centella asiatica* dapat disimpulkan bahwa beberapa golongan senyawa kimia *Centella asiatica* yang memiliki potensi penyembuhan luka bakar meliputi saponin triterpenoid yang merupakan konstituen utama dari *Centella asiatica*, flavonoid, tanin dan alkaloid. Selain itu ada juga golongan senyawa polisakarida, monoterpen bisiklik yaitu senyawa α -pinene, asam amino, steroid, karbohidrat, terpena dan mikronutrien seperti Zn, copper dan mangan yang berpotensi dalam penyembuhan luka bakar.

Mekanisme penyembuhan luka bakar dari golongan senyawa saponin triterpenoid berkaitan dengan konstituennya yaitu *asiaticoside*, *madecassoside* dan asam asiatik, di mana senyawa ini dapat membantu menginduksi angiogenesis, membentuk kolagen tipe I dalam fibroblas dermal manusia melalui aktivasi reseptor TGF- β I kinase-independen jalur persinyalan Smad, dan bertanggung jawab dalam mempercepat epitelisasi dan pembentukan re-epitelisasi serta pembentukan berkas kolagen.

Golongan senyawa flavonoid berperan dalam proses penyembuhan luka bakar melalui efek antioksidannya di mana senyawa ini dapat menangkalkan radikal bebas dan menekan pembentukan *Reactive Oxygen Species* (ROS) menyebabkan pengurangan stress oksidatif sehingga dapat mempercepat penyembuhan luka bakar.

Dalam proses penyembuhan luka bakar golongan senyawa tanin diketahui memiliki aktivitas antioksidan, astrigen, antibakteri dan

angiogenik yang dapat membantu mempercepat penyembuhan luka. Selain membantu khelasi radikal bebas dan *Reactive Oxygen Species* (ROS) aktivitas antioksidan dari tanin diketahui dapat menyebabkan peningkatan proliferasi fibroblas yang dapat mensekresikan TNF.

Golongan senyawa alkaloid diketahui mempunyai aktivitas penyembuhan luka bakar terkait dengan potensi antibakteri dan analgesik yang dimikinya di mana dapat mengurangi peradangan atau filtrate inflamasi, meningkatkan kolagen I, aktivitas MMP-2 dan jumlah GAGs yang dapat menyebabkan peningkatan perbaikan jaringan pada luka bakar.

Selain beberapa golongan senyawa kimia diatas terdapat juga senyawa polisakarida yang dapat membantu proses penyembuhan luka bakar dengan promosi proliferasi fibroblas yang berperan dalam remodeling matriks ekstraseluler (ECM) selama proses penyembuhan luka sedangkan senyawa α -pinene mampu meningkatkan konsentrasi faktor pertumbuhan fibroblas dasar (bFGF), *platelet derived growth factor* (PDGF) dan meningkatkan angiogenesis.

5.2. Saran

Berdasarkan hasil kajian pustaka secara sistematis terhadap artikel ilmiah yang diterima mengenai mekanisme penyembuhan luka bakar dari golongan senyawa kimia yang terkandung dalam tanaman pegagan (*Centella asiatica*), diharapkan penelitian selanjutnya melakukan pengujian mekanisme penyembuhan luka bakar dari masing-masing golongan senyawa kimia yang diisolasi dari tanaman pegagan (*Centella asiatica*) seperti senyawa alkaloid, flavonoid dan tanin. Hal ini dilakukan untuk memverifikasi hasil kajian pustaka yang diperoleh mengenai mekanisme penyembuhan luka bakar dari masing-masing golongan senyawa kimia

sesuai dengan hasil pengujian dengan menggunakan senyawa kimia yang diisolasi langsung dari tanaman pegagan (*Centella asiatica*).

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