

INTISARI

Perawatan ortodonti bertujuan untuk memperbaiki oklusi dan relasi gigi geligi untuk meningkatkan tingkat kesehatan dan fungsi rongga mulut pasien. Salah satu efek samping dari perawatan ortodonti yang banyak terjadi adalah ulkus traumatik pada mukosa oral. Ulkus traumatik terjadi karena gesekan dengan sudut tajam peranti ortodonti sehingga menyebabkan hilangnya lapisan epitel. Pengobatan ulkus traumatik yang diberikan pada umumnya berupa analgesik untuk mengurangi rasa nyeri dan antiinflamasi untuk mempercepat proses inflamasi sehingga penyembuhan luka terjadi lebih cepat. Proses inflamasi melibatkan peran penting sel inflamasi di antaranya yaitu leukosit polimorfonuklear. *Coconut shell liquid smoke* (CSLS) memiliki komponen aktif berupa senyawa polifenol, fenol, dan flavonoid yang memiliki aksi antioksidan dan antiinflamasi. *Essential oil* serai mengandung citral, citronellal, dan geraniol yang memiliki aksi antimikrobal dan efek aromatik. *Essential oil* serai dan CSLS dikombinasikan dalam bentuk sediaan *mucoadhesive patch* sebagai terapi ulkus traumatik. Penelitian ini bertujuan untuk mengetahui efektivitas aplikasi *mucoadhesive patch* CSLS - essential oil serai terhadap jumlah leukosit polimorfonuklear pada model ulkus traumatik mukosa mulut tikus Wistar.

Penelitian ini menggunakan 18 ekor tikus wistar yang dibagi menjadi 3 kelompok perlakuan (aplikasi *mucoadhesive patch* CSLS-essential oil serai, kontrol positif, dan kontrol negatif). Induksi ulkus traumatik dilakukan pada mukosa labial inferior sisi kanan menggunakan alat *punch biopsy* berdiameter 3 mm. Dua ekor tikus dari setiap kelompok didekapitasi pada hari ke-1, ke-5, dan ke-7 kemudian dilakukan pengambilan jaringan ulkus dan dibuat sediaan histologis dengan pewarnaan Hematoksilin Eosin. Sel leukosit polimorfonuklear pada preparat histologis diamati menggunakan mikroskop cahaya OptiLab dengan perbesaran 400x pada 5 lapang pandang.

Hasil penelitian menunjukkan terjadinya penurunan jumlah leukosit polimorfonuklear pada kelompok perlakuan *mucoadhesive patch* CSLS-essential oil serai. Hasil analisis Two Way ANOVA menunjukkan adanya perbedaan signifikan ($p < 0,05$) antara kelompok perlakuan dan hari pengamatan. Uji post hoc Least Significant Differences (LSD) menunjukkan adanya perbedaan jumlah sel leukosit polimorfonuklear antara kelompok kontrol negatif dan kelompok perlakuan dengan *mucoadhesive patch* CSLS-essential oil serai. Dari penelitian ini dapat disimpulkan bahwa pemberian *mucoadhesive patch* CSLS-essential oil serai efektif dalam menurunkan jumlah sel leukosit PMN pada model ulkus traumatik mukosa mulut.

Kata kunci : ulkus traumatik, leukosit polimorfonuklear, *coconut shell liquid smoke*, *essential oil* serai

ABSTRACT

Orthodontic treatment aims to improve occlusion and tooth ligation to improve the health and function of the patient's oral cavity. One of the most common side effects of orthodontic treatment is traumatic ulcers on the oral mucosa. Traumatic ulcers occur due to friction with the sharp angle of the orthodontic appliances, causing the discontinuity of the epithelial layer. Traumatic ulcer treatment is generally given in the form of analgesics to reduce pain and anti-inflammatory to speed up the inflammatory process so that wound healing occurs faster. The inflammatory process involves the important role of inflammatory cells, including polymorphonuclear leukocytes. Coconut shell liquid smoke (CSLS) has active components in the form of polyphenols, phenols, and flavonoid compounds that have antioxidant and anti-inflammatory effects. Lemongrass essential oil contains citral, citronellal, and geraniol that have antimicrobial action and aromatic effects. Lemongrass essential oil and CSLS are combined in the form of mucoadhesive patch preparations as a treatment for traumatic ulcers. This study aims to determine the effectiveness of the application of mucoadhesive patch CSLS - lemongrass essential oil on the number of polymorphonuclear leukocytes in the traumatic ulcer model of the oral mucosa of Wistar rats.

This study used 18 Wistar rats which were divided into 3 treatment groups (application of mucoadhesive patch CSLS-essential lemongrass, positive control, and negative control). Induction of traumatic ulcers is performed on the right side of the inferior labial mucosa using a 3 mm diameter punch biopsy device. Two mice from each group were decapitated on the 1st, 5th, and 7th days then ulcer tissue was taken and histological preparations were made with Haematoxylin-Eosin staining. Polymorphonuclear leukocyte cells in histological preparations were observed using OptiLab light microscope with 400x magnification at 5 fields of view.

The results showed a decrease in the number of polymorphonuclear leukocytes in the mucoadhesive patch treatment group of CSLS-essential oil. The results of the Two-Way ANOVA analysis showed a significant difference ($p < 0.05$) between the treatment group and the observation day. The post hoc Least Significant Differences (LSD) test showed that there was a difference in the number of polymorphonuclear leukocyte cells between the negative control group and the treatment group with mucoadhesive patch CSLS-essential oil lemongrass. From this study, it can be concluded that the administration of mucoadhesive patch CSLS-essential oil lemongrass is effective in reducing the number of PMN leukocyte cells in the traumatic ulcer model of the oral mucosa.

Keywords: traumatic ulcer, polymorphonuclear cell, coconut shell liquid smoke, lemongrass essential oil