

INTISARI

Sel fibroblas berperan penting pada proses penyembuhan luka pascapencabutan gigi dengan pembentukan jaringan baru. *Eco-enzyme* (EE) adalah fermentasi limbah organik segar yang menghasilkan gas O₃ (ozon), enzim amilase, protease, lipase, alkaloid, flavonoid, saponin, dan tanin. Zat-zat aktif tersebut dapat berfungsi sebagai antiinflamasi, antimikroba, antioksidan. *Eco-enzyme* dibuat dari kulit jeruk *baby* Pacitan (*Citrus x aurantium* L.) dan daun serai (*Cymbopogon citratus* (DC.) Stapf). Tujuan penelitian yaitu mengetahui pengaruh pemberian gel *eco-enzyme* yang terbuat dari kulit jeruk *baby* Pacitan (*Citrus x aurantium* L.) dan daun serai (*Cymbopogon citratus* (DC.) Stapf) terhadap jumlah fibroblas pada luka pascapencabutan gigi.

Tikus *Sprague Dawley* berjenis kelamin jantan berumur 2-3 bulan, dibagi menjadi 2 kelompok yaitu kelompok perlakuan yang diberi gel *eco-enzyme* 60% dan kelompok kontrol yang diberi gel *povidone iodine*. Masing-masing kelompok terbagi menjadi subkelompok hari 3, 5, 7 dan 14 dengan 3 subjek per subkelompok. Dalam keadaan teranestesi, gigi insisivus kiri rahang bawah dicabut. Pada soket diaplikasikan 0,02 mL gel EE 60% atau gel *povidone iodine* berturut-turut pada hari ke-0 (setelah pencabutan) sebanyak satu kali pada kelompok perlakuan maupun kontrol. Hari yang ditentukan yaitu hari ke-3, 5, 7 dan 14, dalam keadaan teranestesi dilakukan perfusi intrakardial dan eksanguinasi. Jaringan diproses histologis dengan pewarnaan *Hematoksin-Eosin*. Jumlah fibroblas dihitung lima lapang pandang oleh tiga orang pengamat dan dilanjutkan analisis statistik.

Hasil uji ANAVA 2 jalur menunjukkan perbedaan signifikan antara jumlah fibroblas pada kelompok gel *eco-enzyme* maupun kelompok kontrol ($p < 0,05$) pada hari ke-3, 5, 7 dan 14. Uji *Post Hoc LSD* menunjukkan pada hari ke-3, 5, dan 7 jumlah fibroblas pada kelompok perlakuan lebih banyak secara signifikan ($P < 0,05$) dibanding kelompok kontrol. Pada hari ke-3 kelompok kontrol dan hari ke-5 kelompok gel *eco-enzyme* tidak terdapat perbedaan signifikan ($p = 0,805$). Pada hari ke-14, terjadi penurunan yang signifikan jumlah fibroblas pada kelompok gel *eco-enzyme*. Pada kelompok perlakuan lebih rendah dari kelompok kontrol. Kesimpulan penelitian yaitu gel *eco-enzyme* berbahan dasar kulit jeruk *baby* Pacitan dan daun serai konsentrasi 60% dapat meningkatkan proliferasi sel fibroblas proses penyembuhan luka pascapencabutan gigi.

Kata Kunci: *eco-enzyme*, fibroblas, kulit jeruk *baby* Pacitan, serai, penyembuhan luka, pencabutan gigi

ABSTRACT

Fibroblast cells play an important role in post-tooth extraction wound healing with the formation of new tissue. Eco-enzyme (EE) is the fermentation of fresh organic waste that can produce O₃ gas (ozone), amylase enzymes, proteases, lipases, alkaloids, flavonoids, saponins, and tannins. These active substances can function as anti-inflammatory, antimicrobial, antioxidants. Eco-enzyme is made from the peel of *baby* Pacitan orange (*Citrus x aurantium L.*) and lemongrass leaves (*Cymbopogon citratus* (DC.) Stapf). The purpose of the study was to determine the effect of giving eco-enzyme gel made from *baby* Pacitan orange peel (*Citrus x aurantium L.*) and lemongrass leaves (*Cymbopogon citratus* (DC.) Stapf) on the number of fibroblasts in post-tooth extraction wounds.

Rat Sprague Dawley were males aged 2-3 months, divided into 2 groups, namely the treatment group given 60% eco-enzyme gel and the control group given povidone iodine gel. Each group was divided into subgroups of days 3, 5, 7 and 14 with 3 subjects per subgroup. In a state of anesthesia, the left incision tooth of the lower jaw is removed. In the socket, 0.02 mL of EE 60% gel or povidone iodine gel was applied consecutively on day 0 (after extraction) once in the treatment and control groups. The specified days are the 3rd, 5th, 7th and 14th days, in the state of anesthesia intracardial perfusion and exsanguination are performed. The tissue is histologically processed by Hematoxylin-Eosin staining. The number of fibroblasts was counted in five fields of view by three observers and continued with statistical analysis.

The results of the Two-way ANOVA test showed a significant difference between the number of fibroblasts in the EE gel group and the control group ($p < 0.05$) on days 3, 5, 7 and 14. The LSD Post Hoc test showed that on days 3, 5, and 7, the number of fibroblasts in the treatment group was significantly higher ($P < 0.05$) than in the control group. On the 3rd day of the control group and the 5th day of the eco-enzyme gel group, there was no significant difference ($p = 0.805$). On day 14, there was a significant decrease in the number of fibroblasts in the eco-enzyme gel group. In the treatment group, it was lower than the control group. The conclusion of the study was that eco-enzyme gel based on *baby* Pacitan orange peel and lemongrass leaf concentration of 60% can increase the proliferation of fibroblast cells in the wound healing process after tooth extraction.

Keywords: eco-enzyme, fibroblasts, *baby* Pacitan orange peels, lemongrass, wound healing, tooth extraction