ABSTRAK

Abdillah, F M. 2015. **Pengaruh *Pulsed Electromagnetic Field* Terhadap Proliferasi Fibroblas Pada Soket Paska Ekstraksi Gigi Tikus *Rattus Norvegicus*.** Tugas Akhir, Fakultas Kedokteran, Universitas Brawijaya. Pembimbing: (1) drg. Miftakhul Cahyati Sp. PM. (2) drg, Yuliana Ratna Kumala, Sp.KG

Ekstraksi gigi merupakan pencabutan gigi dari soket tulang alveolar dan meninggalkan luka pada jaringan lunak disekitarnya. Komplikasi pasca ekstraksi yaitu *dry socket* dan infeksi. Penatalaksanaan pasca ekstraksi saat ini menggunakan penjahitan untuk melindungi soket. Penelitian ini bertujuan mengetahui pengaruh *Pulsed Electromagnetic Field* terhadap proliferasi sel fibroblas pada soket pasca ekstraksi gigi tikus *Rattus norvegicus.* Mekanisme kerja PEMF yaitu gelombang elektromagnetik dapat memodulasi produksi *growth factor* FGF-2 dan memberi signal Ca^{2+} intraseluler. Reaksi ini memodulasi FGF-2, TGF, VEGF, dan PDGF. Penelitian menggunakan model *posttest only control design* menggunakan 25 ekor yang dibagi menjadi 5 kelompok yaitu kontrol negatif tidak diberikan perlakuan, kontrol positif hanya dijahit, perlakuan 1, 2 dan 3 diterapi PEMF frekuensi 15Hz, 45Hz dan 75Hz. Insisivus kiri bawah dicabut lalu diberikan perlakuan sesuai kelompok selama 20 menit per hari selama 10 hari. Hari ke-10 tikus dibedah. Jumlah fibroblas dihitung pada preparat dengan perwarnaan HE, diamati dibawah mikroskop dengan pembesaran 400x. Hasil penelitian menunjukkan perbedaan jumlah fibroblas yang bermakna antara kelompok perlakuan ($p<0,05$). Hasil rata-rata jumlah fibroblas kelompok kontrol negatif 68,80; kontrol positif 73,40; perlakuan PEMF 15Hz 99,20; perlakuan PEMF 45Hz 86,80; perlakuan PEMF 75Hz 75,60. Kesimpulan penelitian adalah PEMF berpengaruh terhadap proliferasi fibroblas pada soket paska ekstraksi gigi tikus *Rattus norvegicus.*

Kata kunci: Soket paska ekstraksi, PEMF, fibroblas, FGF-2

ABSTRACT

Abdillah, F M. 2015. **The Effect of *Pulsed Electromagnetic Field* on Fibroblast Proliferation in Post Extraction Tooth of *Rattus norvegicus* Rat.**. Final Assignment, Dentistry Program, Faculty of Medicine, Brawijaya University. Supervisor: (1) drg. Miftakhul Cahyati Sp. PM., (2) drg, Yuliana Ratna Kumala, Sp.KG

Tooth extraction is a way to remove the tooth from its alveolar socket which could wound the adjacent soft tissue. Further complication would be dry socket and infection. Post extraction treatment should be stitching in order to protect the socket. The purpose of this research is to assess the effect of *Pulsed Electromagnetic Field* toward fibroblast cell proliferation in post extraction socket of *Rattus novergicus*. PEFM mechanism described as an electromagnetic pulse modulating the production of *growth factor* PGF-2 and signaling intracellular Ca^{2+}. This reaction further modulates FGF-2, TGF, VEGF, and PEGF. This research is done with posttest only control design using 25 *Rattus novergicus* divided in 5 treatment groups which is negative control group with no treatment, positive control group with stitching only, group 1,2 and 3 PEMF treated with 15Hz, 45Hz and 75 Hz frequency. Left inferior incisive extracted then treated accordingly for 20 minutes within 10 days. Surgical procedure done in the tenth day. Fibroblast cell counted with HE staining, observed under 400x magnification microscope. The result of this research shown a significant difference of fibroblast cell count between treatment groups with ($p<0,05$). Average fibroblast count each group is negative control 68,80; positive control 73,40; PEMF treated 15 Hz 99,20, PEMF treated 45Hz 86,80, PEMF treated 75 Hz 75,60. This research leads to conclusion that PEMF affect fibroblast cell proliferation in the socket of post extracted *Rattus novergicus*.

Keywords: post extraction socket, PEMF, fibroblast, FGF-2