

PENGARUH PENGGUNAAN RESIN 4-META/MMA-TBB DAN RESIN EPOKSI SEBAGAI SILER PADA *RETREATMENT* DENGAN VARIASI LAMA KONTAK PELARUT D-LIMONENE TERHADAP KERAPATAN APIKAL

INTISARI

D-limonene merupakan pelarut organik yang mampu melarutkan bahan obturasi dengan aktivitas pemecahan ikatan struktur bahan obturasi. Tahap obturasi pada *retreatment* dilakukan menggunakan guta perca dan siler yaitu siler resin epoksi dan resin 4-META/MMA-TBB. Tujuan penelitian ini adalah untuk mengetahui pengaruh penggunaan siler *retreatment* resin epoksi dan resin 4-META/MMA-TBB pasca aplikasi *D-limonene* terhadap kerapatan apikal.

Spesimen berupa 28 premolar mandibula, dipotong pada bagian servikal dan menyisakan akar sepanjang 14 mm. Spesimen dibagi menjadi 2 kelompok waktu kontak 1 menit (I) dan 2 menit (II) dan dibagi menjadi 2 subkelompok obturasi siler resin epoksi (A) dan resin 4-META/MMA-TBB (B), masing-masing 7 spesimen. Spesimen dilakukan perawatan saluran akar kemudian dilakukan *retreatment*, kelompok IA dan IB dikontakkan *d-limonene* 1 menit dan kekelompok IIA dan IIB 2 menit. Kelompok IA dan IIA diobturasi dengan resin epoksi dan IB dan IIB diobturasi resin 4-META/MMA-TBB. Spesimen direndam dalam metilen biru dan dipotong longitudinal kemudian diamati kebocoran apikalnya menggunakan mikroskop stereo. Data hasil dianalisis dengan ANAVA dua jalur dan *post-hoc* LSD dengan tingkat kepercayaan 95%.

Hasil uji ANAVA menunjukkan perbedaan signifikan antara jenis siler terhadap kerapatan apikal dan lama kontak *d-limonene* terhadap kerapatan apikal ($p < 0,05$), namun tidak terdapat interaksi antara jenis siler dengan lama kontak. Kesimpulan penelitian ini adalah siler resin 4-META/MMA-TBB menghasilkan kerapatan apikal lebih tinggi dibanding resin epoksi, dan lama kontak *d-limonene* 2 menit menghasilkan kerapatan apikal lebih tinggi dibanding 1 menit.

Kata kunci: *retreatment*, resin 4-META/MMA-TBB, resin epoksi, *d-limonene*

THE EFFECT OF USING 4-META/MMA-TBB RESIN AND EPOXY RESIN AS A SEALER AT RETREATMENT WITH CONTACT TIME VARIATIONS OF D-LIMONENE SOLVENT ON APICAL DENSITY

ABSTRACT

D-Limonene is an organic solvent that is able to dissolve the obturation material by breaking the bonding structure of the material. The obturation stage at retreatment carried out using gutta percha and sealer, which were epoxy resin and 4-META/MMA-TBB resin. The objective of research was to determine the effect of the use of epoxy resin and 4-META/MMA-TBB resin as retreatment sealer after d-limonene application on apical density.

Specimens consisted of 28 mandibula premolars, which were cut at servical and leaving 14mm-long roots. Specimens were divided into 2 groups of contact time, 1-minute (I) and 2-minutes (II), then divided into 2 subgroups of sealer, epoxy (A) and 4-META/MMA-TBB resin (B), each consists of 7 specimens. Group IA and IB were contacted with d-limonene for 1 minute, group IIA and IIB for 2 minutes. Group IA and IIA were obturated with epoxy resin, group IB and IIB with 4-META/MMA-TBB resin. The specimens were soaked in methylene-blue and cut longitudinally then its apical leakage was observed using stereo microscope. Results were analyzed with two-way-ANOVA and post-hoc LSD with 95% confidence level.

ANOVA showed significant difference between 2 types of sealer to apical density and 2 different contact times of d-limonene solvent to apical density ($p < 0,005$), but there was no interaction between type of sealer and contact time. The conclusions of this research are 4-META/MMA-TBB resin have higher apical density than epoxy resin as a sealer at retreatment, and contact time of d-limonene solvent for 2 minutes have higher apical density than 1 minute.

Keywords: *retreatment, resin 4-META/MMA-TBB, resin epoksi, d-limonene*