

PENGARUH JENIS DAN LAMA PERENDAMAN *NON DENTAL GLASS FIBER REINFORCED COMPOSITE* TERHADAP SITOTOKSISITAS SEL FIBROBLAS

INTISARI

Perawatan di kedokteran gigi mulai menggunakan material *fiber reinforced composite* (FRC) sebagai bahan penyusun alat-alat tertentu seperti gigi tiruan cekat, restorasi *onlay*, *splinting* gigi goyah, pasak gigi dan *space maintainer*. Penyusun FRC terdiri dari *fiber* dengan jenis terbanyak *glass fiber* dan matriks berupa *dental composite*. *Non dental glass fiber* merupakan jenis *glass fiber* yang digunakan pada pembuatan gypsum, patung dan alat-alat otomotif yang mudah dijumpai di pasaran dengan harga terjangkau. Tujuan penelitian ini adalah untuk mengetahui potensi sitotoksitas jenis dan lama perendaman *non dental glass fiber reinforced composite* terhadap sel fibroblas yang mati.

Penelitian ini menggunakan FRC yang diperkuat oleh 3 jenis *non dental glass fiber* I, II, III dan *dental E-glass fiber* sebagai pembanding. Uji sitotoksitas dilakukan dengan *methyl tetrazolium test* (MTT) menggunakan sel Vero terhadap air hasil rendaman FRC selama 1, 4, 7 dan 10 hari masing-masing 6 pengulangan sampel tiap kelompok. Jumlah sel yang mati menunjukkan tingkat sitotoksitas dan kemudian dianalisa dengan Anava dua jalur ($\alpha = 0,05$).

Hasil penelitian menunjukkan rata-rata kematian sel tertinggi yaitu $8,55 \pm 0,27$ % pada FRC III dengan lama perendaman 10 hari, sedangkan rata-rata kematian sel terendah yaitu $8,48 \pm 0,35$ % pada *dental glass fiber* dengan lama perendaman 1 hari. Berdasarkan pedoman dari Sjögren bahan tidak bersifat sitotoksis jika kematian sel masih dibawah 10%. Uji Anava dua jalur menunjukkan bahwa jenis *non dental glass fiber reinforced composite* dan lama perendaman mempunyai pengaruh tidak bermakna ($p > 0,05$) terhadap sitotoksitas sel fibroblas. Kesimpulan hasil penelitian yaitu *non dental glass fiber reinforced composite* tidak bersifat sitotoksis terhadap sel fibroblast. Jenis *non dental glass fiber reinforced composite* dan lama perendaman tidak berpengaruh terhadap sitotoksitas sel fibroblas.

Kata kunci : *non dental glass fiber reinforced composite*, lama perendaman, sitotoksitas.

THE EFFECT OF TYPE AND DURATION OF IMMERSION NON DENTAL GLASS FIBER REINFORCED COMPOSITE ON CYTOTOXICITY OF FIBROBLAST CELL LINE

ABSTRACT

Fiber reinforced composite (FRC) is a commonly agent used in dental treatment, and its function as a filler material for certain appliance compilers include fixed artificial tooth, onlay, splinting, tooth dowel and space maintainer. FRC is mainly consisted from fiber with glass fiber and dental composite matrix. Non dental glass fiber is a glass fiber type used at gypsum processing and otomotif appliances which is easy to be found at global market with reasonable price. The aim of study was to examine the cytotoxicity effect of type and duration of immersion non dental glass fiber reinforced composite on a fibroblast cell line.

FRC reinforced 3 types of non dental glass fiber include I, II, III composition and dental E-glass fiber as a comparator. Cytotoxicity test using Vero cells incubated with water immersion of FRC for 1, 4, 7 and 10 days was confirmed by MTT assay. Research was done in 6 replications. Statistic analysis was delivered by SPSS 17.0. Data was analyzed by two-way Anova with level of significance 95%.

Result of study revealed type and duration of immersion non dental glass fiber reinforced composite was non-significantly toxic on Vero fibroblast cell. Composition II of FRC with $8.55 \pm 0.27\%$ and 10 days immersion duration was showed highly cell death. Inversely, $8.48 \pm 0.35\%$ of dental E-glass fiber with 1 day immersion duration was detected at lower cell death level. According to Sjorgen that was not cytotoxic material if the dead cell lower than 10%. Statistical analysis show that type of non dental glass fiber reinforced composite and duration of immersion on cytotoxicity was not significant ($p > 0.05\%$). In conclusion, non dental glass fiber reinforced composite was not cytotoxic on fibroblast cell line. Type of non dental glass fiber reinforced composite and duration of immersion was not effect on cytotoxicity.

Key word: non dental glass fiber reinforced composite, immersion duration, cytotoxicity.