

# Pengaruh Durasi Penyinaran LCU LED dengan Metode Berbeda Terhadap Kuat Kompresi Resin Komposit Bulk fill = Effect of curing time with different mode LCU LED on compressive strength of Bulk fill composite resin

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## Abstrak

Latar Belakang : Pada penelitian sebelumnya, iradiasi menggunakan iradiasi pulsa LCU cenderung diikuti dengan suhu cahaya yang relatif rendah sehingga aman untuk pulpa gigi dan telah diaplikasikan untuk polimerisasi resin komposit nanofil dalam waktu 20 detik. berdenyut melawan kekuatan kompresi selama 5, 10, 20 detik. Metode : 60 spesimen resin komposit isi curah silinder diameter 3 mm dan tebal 6 mm, diiradiasi dengan LCU eksperimental iradiasi pulsa dan LCU komersial iradiasi kontinyu sebagai kontrol selama 5, 10, 20 detik. Kemudian direndam dengan air suling selama 24 jam. Spesimen kemudian diuji kuat tekannya menggunakan mesin uji universal (Shimadzu AGS-X 5kN, Jepang) dengan kecepatan crosshead 0,5m/s. Hasil: terjadi peningkatan kuat tekan resin komposit isian curah iradiasi dengan LCU eksperimental selama 5, 10, 20 detik, memiliki hasil berturut-turut sekitar 209,43 hingga 241,80 MPa. Kemudian dengan iradiasi kontinyu LCU komersial memiliki hasil berturut-turut sekitar 210,69 hingga 261,72 MPa. Analisis one-way ANOVA dan post hoc bonferroni menunjukkan hasil yang tidak berbeda nyata ( $p>0,05$ ) nilai kuat tekan antara kedua metode penyinaran pada lama waktu yang sama. Tidak terdapat perbedaan yang signifikan pada masing-masing metode iradiasi pada durasi yang berbeda. Sementara itu, mendeteksi perbedaan yang signifikan ( $p<0,05$ ) pada kekuatan tekan resin komposit pengisian curah dengan penyinaran antara 5 dan 10 detik dan 5 dan 20 detik dengan metode penyinaran kontinyu. Kesimpulan: kuat tekan resin komposit bulk fill baik dengan iradiasi pulsa maupun kontinyu selama 5, 10, 20 detik meningkat dengan bertambahnya lama iradiasi, dan iradiasi menggunakan metode pulsa dan kuat tekan kontinyu menghasilkan resin komposit bulk fill yang tidak berbeda nyata.

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Background : In previous studies, irradiation using LCU pulse irradiation tends to be followed by a relatively low light temperature so that it is safe for dental pulp and has been applied to polymerize nanofil composite resins within 20 seconds. pulse against the force of compression for 5, 10, 20 seconds. Methods : 60 specimens of cylindrical bulk-filled composite resin with a diameter of 3 mm and a thickness of 6 mm, were irradiated with pulse irradiation experimental LCU and continuous irradiated commercial LCU as control for 5, 10, 20 seconds. Then soaked with distilled water for 24 hours. The specimens were then tested for compressive strength using a universal testing machine (Shimadzu AGS-X 5kN, Japan) with a crosshead speed of 0.5m/s. Result: there was an increase in the compressive strength of the irradiated bulk filled composite resin with the experimental LCU for 5, 10, 20 s, had successive yields of about 209.43 to 241.80 MPa. Then with continuous irradiation commercial LCU has successive yields of about 210.69 to 261.72 MPa. One-way ANOVA and post hoc bonferroni analysis showed that the results were not significantly different ( $p>0.05$ ) in the compressive strength between the two irradiation methods at the same time. There was no significant difference in each irradiation method at different durations. Meanwhile, detecting a

significant difference ( $p < 0.05$ ) in the compressive strength of composite resin bulk filling with irradiation between 5 and 10 seconds and 5 and 20 seconds with the continuous irradiation method. Conclusion: the compressive strength of bulk fill composite resins both with pulse and continuous irradiation for 5, 10, 20 seconds increased with increasing irradiation time, and irradiation using pulse and pulse irradiation methods continuous compressive strength resulted in bulk fill composite resin which was not significantly different.