

**The Influence of Three different
Photo-Activation Method and
Polishing On wear resistance of two
types of Composites
(In Vitro Study)**

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ABSTRACT

This in vitro study was conducted to evaluate and compare the effect of photo-activation intensity on wear resistance of two types of polished and unpolished composites. Tetric hybrid composite resin and Filtek P60 Packable composite resin were used in this study; each type of composite was polymerized by conventional Quartz tungsten light curing unit (Astralis-5); light emitted diode (Radii) curing light unit and Argon laser, finished and polished using Aluminum oxide discs .

Specimens divided to group A and group B according to the type of composite resin, then each group subdivide according to the method of polymerization , polishing and un polishing groups as following:

Group A: Specimens of Filtek P60 composite resin

Group A1: unpolished cured with conventional QTH unit for 20seconds

Group A2: polished cured with conventional QTH unit for 20seconds

Group A3: unpolished cured with LED unit for 20seconds

Group A4: polished cured with LED unit for 20seconds

Group A5: unpolished cured with argon laser for 5 seconds

Group A6: polished cured with argon laser for 5 seconds

Group B: Specimens of Tetric Ceram composite resin

Group B1: unpolished cured with conventional QTH unit for 20seconds

Group B2: polished cured with conventional QTH unit for 20seconds

Group B3: unpolished cured with LED unit for 20seconds

Group B4: polished cured with LED unit for 20seconds

Group B5: unpolished cured with argon laser for 5 seconds

Group B6: polished cured with argon laser for 5 seconds

Ten samples were made from each group giving a total of 120 samples. All samples of all groups were measured by profilometer. The Ra value of each sample obtained before and after wearing by wearing device constructed specially for this purpose. The difference between Ra value before and after wearing gave the value of wear rate of each sample.

ANOVA One-way test, and student -t test were used to analyze the results and to show the comparison of significant.

Results showed that Packable Composite (Filtek P60) showed a significantly higher wear resistance than Hybrid composite (Tetric), also show that there is highly significant difference in the abrasive wear between unpolished Packable and unpolished Tetric Ceram within the same light curing system and significant difference in the abrasive wear between polished Packable and polished Tetric Ceram within the same light curing system. In addition results showed that there was no significant effect of light intensity (Conventional QTH, LED and Argon Laser) on the wear rate of both types of composite resins.