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[\[PDF \(431K\)\]](#) [\[References\]](#)**Effects of LEDs on Microhardness and Temperature Rise of Dental Composite Resins**[Tae-Sung JEONG^{1\)}](#), [Young-Ran KIM^{1\)}](#), [Jong-Hwa KIM^{2\)}](#), [Hyung-II KIM^{3\)}](#) and [Yong Hoon KWON^{3\)}](#)

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Abstract:

The purpose of this study was to examine the effects of LEDs on the polymerization of dental composite resins. Three composite resins and two LED units were used to evaluate the latter's effects on microhardness and temperature rise. In particular, two composite resins contained a cointiator in addition to camphorquinone (CQ). The emission peak of the tested LEDs matched well with the absorption peak of CQ, while G-Light had one additional but weak peak near 410 nm. As for the cointiators, their absorption peaks were lower than 400 nm. Within the specimens, incident photons from the LED units showed an exponential decrease in their counts as the specimens became thicker. However, microhardness values decreased and became almost linear at subsurface levels regardless of the curing unit. Among the composite resins, Z250 showed the highest microhardness value. As for the temperature rise (°C) due to exothermic reaction at polymerization, it was higher than 5°C for the 40-second light curing with both LED units. Among the specimens, Solitaire 2 cured with G-Light showed the highest temperature rise.

Key words:[LEDs](#), [Composite resins](#), [Microhardness](#)

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