

Characteristics of Various Light Curing Units

— Comparison with High Intensity LED Curing Units —

Akira KAMADA¹, Kimihiro MORIKAWA², Keisuke ITAKURA¹ and Takahiro SAITO¹

The clinical application of composite resin as an esthetic repair is increasing and is also recommended by Minimal Intervention dentistry. High intensity light-curing units using super luminosity blue light-emitting diodes (LEDs) have become indispensable for light-cured composite resin fillings.

Comparison of the light-cured composite resin polymerization obtained through light-curing units using high intensity LEDs with those employing second generation LEDs, halogen and xenon demonstrated the following results.

- 1) Light intensity of the high intensity LED light-curing unit was twice that of the halogen light-curing unit (790-900 mw/cm² vs. 360-540 mw/cm²).
- 2) No difference in light intensity was observed between the second generation LED light-curing unit and the halogen light-curing unit.
- 3) Light intensity of the xenon light-curing unit was twice that of the high intensity LED and four times that of the halogen light-curing units.
- 4) The high intensity LED light-curing unit obtained a ≥ 5 mm depth of cure in half the time (20 secs) of the halogen and second generation LED light-curing units.
- 5) Xenon achieved a ≥ 5 mm depth of cure in a very short period (10 secs).

In summary, irradiation of the high intensity LED curing-unit is useful in cordress and gives a sufficient intensity additional camphorquinone to polymerization of light cure composite resin.

Key words : high intensity LED curing-units, light intensity, curing depth