



Proposal of new dental color system through color research of restorative materials

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I. Objectives

The purpose of this study was to propose a new dental color system through color evaluation of generally used dental composite and porcelain.

II. Materials and Methods

In this study, Vita Omega 900 dental porcelain and 10 kinds of composite resins were used. A disk specimens(15 mm diameter, 4 mm thickness) of each material/shade combination were made. Resin composite was condensed into Teflon mold and pressed between glass plates to flatten the surface. Pressed composite was polymerized using an Optilux 501(Demetron, USA) for 200 seconds of each side. The surfaces were polished sequentially on wet 1000-, 1200-, 1500-, and 2000-grit sandpaper. Portable spectrophotometer MiniScan XE Plus(HunerLab, USA) was used to determine CIEL*a*b* coordinates of each specimen. Average daylight (CIE illuminant D65) was used as light source. Measurement was performed by diffuse illumination and 8 degree viewing system through 14.3 mm Viewing port.

Minimum, maximum, median and mean value of measured CIE L*a*b values were calculated. And distribution of these values was evaluated and arranged to new dental color system (CNU CONS dental color chart).

III. Results

1. At the value for a 95% confidence interval, L* value distributed from 74.22 to 60.9, a* value from 6.36 to 0.05, and b* value from 21.65 to 9.95.
2. New dental color system expressed as T### (for example : T555, T274.). First # represents range of L* value, second # represents a* value, and third # represents b* value.
3. The interval of first numeral is 1.5, the interval of second and third numeral is 1.
4. The first Arabic numeral "5" represents the range of L* value from 66.50 to 67.99, the second Arabic numeral "5" represents the range of a* value from 3.00 to 3.99, and the third Arabic numeral "5" represents the range of b* value from 14.00 to 14.99.