The Effect of Heat-polymerizing Method on Color Stability of Acrylic and Composite Resin Denture Teeth

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Abstract

Objectives: The purpose of this study was to investigate the color stability of acrylic and composite denture teeth after heat-polymerization method.

Methods: Three different brands of acrylic denture teeth: Livera Alpha (LA), Yamahashi (YA) and Major Dent (MA) and 2 different brands of composite denture teeth: Yamahashi PX (YC) and Endura (EC) were tested. Ten maxillary central incisors from each group were pressed onto putty-type polyvinyl siloxane in order to measure color in the same area of denture teeth. Color, at cervical third and incisal third, was recorded by spectrophotometer in CIE L*a*b system. All specimens were undergone heat-polymerization of heat-curing acrylic resin. After flask cooling for 24 hours, the specimens were removed. The color measurement was performed at the same area of each specimen. Color differences (ΔE) was calculated. A ΔE of ≤3.3 was considered clinically acceptable. The data were evaluated by 3-way repeated-measures ANOVA and Tukey HSD test (α =0.05).

Results: The ΔE of LA, YA, EC, MA and YC at incisal third were 4.41±0.56, 2.45±0.60, 0.76±0.57, 0.75±0.24 and 0.63±0.24 respectively. At cervical third, the ΔE of LA, YA, EC, MA and YC were 4.59±1.26, 2.44±1.08, 0.59±0.36, 0.81±0.61 and 1.22±0.78 respectively. The highest ΔE values were found in LA. These values were significantly higher than those obtained from other brands (p<0.05) and beyond clinically acceptable level.

Conclusions: After heat-polymerization, the color of LA changed significantly at both incisal and cervical areas. On the other hand, color stability of YA, EC, MA and YC were clinically acceptable.

Keywords: acrylic denture teeth, color stability, composite denture teeth, heat-curing polymerization