p-21 Metamerism in composite resins under five standard illuminants – D_{65}, A, C, TL84 and Fcw

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Ⅰ. Objectives.

There were problems in selecting exact colors of composite resins currently used in clinic by examining with naked eyes. This study was done to present a criterion in selection of the most proper light sources and materials by measuring metamerism index of the light curing composite resins with spectrocolorimeter. Metamerism is present when two objects appear to be the same color in one illuminant but different in another. This is due to the fact that they have different spectral curves that fail to match under the second illuminant.

Ⅱ. Materials and Methods

In this study, five light polymerized composite resins; Ethet-X, Filteck Z250, Filteck A110, Charisma, Vitalescence which are currently used in clinic were chosen based on Vita shade.

Five samples were made for shade of each product with Teflon mold(diameter: 15㎜, thickness: 2㎜). Transparent celluloid and Teflon mold were placed on a glass plate and the composites were injected. It was condensed with resin plugger without bubbles and remained resin were removed by placing another celluloid and glass plate on top and compressing with C-clamp. Compressed resins were light polymerized with a visible light curing unit(Optilux 500, 13㎜ tip diameter, Demetron, USA) for 60 seconds. Polymerized samples were removed and those were grinded to 2.0㎜ in thichness with sand papers(#600 & #1000). Samples were carefully prepared without fingerprints and impurities in grinding procedure and kept in distilled water for a week at room temperature. Metamerism index of each samples on a Barium sulfate plate(L^*=96.54, a^*=0.19, b^*=0.01) prepared for sample fixation were measured with spectrocolorimeter(Miniscan XE plus, Model 4000s, Hunter Lab, USA) by applying standard light source D_{65}, C, Fcw, TL84 and A. Standardization was done with Reference standard(X=80.8, Y=85.7, Z=90.8) and Light trap. Samples were kept in distilled water at room temperature in all procedures. The results are as follows.

Ⅲ. Results

1. Different resins using same Vita shade showed recognizable color difference.
2. All composites had MI below accepted value 0.5 between standard illuminant(D_{65}, C, & A) and below 1.5 under fluorescent condition(Fcw & TL84).
3. MI value between D_{65} and A showed higher value than MI value between other source of light($p<0.01$).
4. All resins except Z250 showed MI value that A3 is higher than A1($p<0.05$).