

An *in vitro* comparative evaluation of color stability of two hybrid composites in liquids ingested by children: A Spectrophotometric study

Abstract

The objective of this study is to evaluate and compare the colour stability of two hybrid composite restorative materials after immersion in five commonly used liquids ingested by children by using a Spectrophotometer. Discs after fabrication were placed in water and subjected to incubation for 24 hrs. Samples were randomly divided into 5 groups for each immersion media. Composite discs were numbered accordingly.

Methods: 100 composite discs, 50 each of nanohybrid and microhybrid of were prepared and then light cured for 40 seconds and were then subjected to incubation for 24 hours. The pre immersion values were taken following which the samples were immersed in five different medias (mineral water, tea, Mirinda, pomegranate juice and iron syrup) three times a day for 15 minutes for 28 days. The color stability was noted at 7th, 14th, 21st and 28th days respectively by using spectrophotometer.

Results: Statistical analysis was done using Mann Whitney U Test and Friedman's Test after obtaining the readings for 28 days.

Interpretation and Conclusion: Iron syrup caused the highest staining among the five media and Nano hybrid composite appeared to be more resistant to staining than micro hybrid composite.

Keywords: Nanohybrid composite • Colour stability • Spectrophotometer

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Introduction

Our society emphasizes on beautiful teeth as an important requirement for an attractive smile. Composites and the acid etch techniques represent the two major advancements in the field of restorative dentistry. The samples were exposed to the test solutions intermittently to simulate oral conditions, and immersion was carried out three times a day to simulate medium frequency consumption conditions. Iron syrup produced the most severe staining on both the composite resins. Procedure was repeated for twenty eight days. Composite resin specimens were stored for thirty days and at the end of storage period, colour stability was recorded in timely manner.

Specimen Preparation

Two spherical acrylic moulds of 8 mm diameter and 2 mm thickness were used to construct hundred specimens of composite restorative material. The mould was placed on a glass slab and filled with composite using composite filling instrument. Each specimen was then cured for forty seconds using Curing light (Woodpecker).

Colour testing

Before exposure to the staining agents, baseline colour measurement of all specimens was recorded. After twenty eight days (three times a day for fifteen minutes) storage in the solutions, the specimens were rinsed with distilled water for five minutes and blotted dry with tissue paper and color measurements were done again. Pre and post immersion color values of all samples were measured with spectrophotometer and ΔE was calculated.

Discussion and Conclusion

Present study compares the color stability of Filtek Z250 (Nanohybrid composite) with that of Valux Plus (Microhybrid composite) when immersed in five commonly ingested beverages by children. Filler particle size and distribution as well as resin matrix composition have shown to play an important role in this context (5). Assuming that a child consumes a beverage three times a day, samples were immersed in all the groups (10 ml), incubated at 37°C, three times a day for ten minutes at an interval of six hours.

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