

*Effect of three types of mouth rinses and human saliva on
microhardness and color stability of packable and
nanocomposite resins
(In vitro study)*

A thesis

*Submitted to the Council of the College of Dentistry at
University of Baghdad in Partial Fulfillment of the
Requirements for the Degree of Master of Science in
Conservative Dentistry*

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1431

2010

Abstract

This in vitro study was conducted to evaluate and compare the effect of three types of mouth rinses (**alcohol containing, alcohol free and chlorhexidine-containing mouth rinses**) and human saliva on microhardness and color stability of two types of composite resins (Filtek Supreme XT nanocomposite and Filtek P60 packable composite resin). Total numbers of 128 specimens were prepared, using molds specially fabricated for this study, and divided according to type of test in to:

- ❖ Sixty four specimens subjected to microhardness test using Vickers micromet tester.
- ❖ Sixty four specimens subjected to color change measurement using spectrophotometer.

Each 64 specimens divided according to type of composite resins used, into two groups:

Group A: 32 specimens made from packable P60.

Group B: 32 specimens made from Filtek Supreme XT nanocomposite.

Then each 32 specimens subdivided into 4 subgroups according to treatment solutions used:-

Subgroup 1: 8 specimens immersed in 20 ml of Listerine.

Subgroup 2: 8 specimens immersed in 20 ml of oral-B.

Subgroup 3: 8 specimens immersed in 20 ml of Corsodyl mint.

Subgroup 4: 8 specimens immersed in 20 ml unstimulated human saliva.

Each subgroup of specimens was immersed, after curing, in distilled water for 24 hr. at 37°C then subjected to either microhardness measurement or color measurement for the baseline readings determination. Then each

subgroup was immersed in 20 ml of the assigned treatment solutions and incubated at 37°C for 24 hr. and re-subjected to microhardness or color measurement. The change in hardness value and in color difference was calculated for each sample.

The resulting data were statistically analyzed using Analysis of Variance test (ANOVA), least significant difference (LSD) and t- test.

The results revealed that, both alcohol-containing and alcohol-free mouth rinses cause highly significant reduction in hardness of Filtek P60 and Filtek Supreme XT. Chlorhexidine-containing mouth rinse causes highly significant decrease in hardness of Filtek Supreme XT and significant decrease in hardness of Filtek P60 while the reduction in microhardness in specimens immersed in saliva was statistically non significant.

About the color stability the results showed, visually perceptible color change was occurred in Filtek Supreme XT material after immersion in all tested solutions except saliva. Filtek P60 show perceptible color change in Listerine and Oral-B mouth rinses and non perceptible color change when immersed in Chlorhexidine-containing mouth rinses or saliva.

When we compare between Filtek P60 and Filtek Supreme XT by T-test, the results found highly significant difference between their subgroups in microhardness and color changes, with higher changes in Filtek Supreme XT.