ABSTRACT

The objectives of this study are to determine the surface microhardness of selected composite restorative materials and to compare the surface microhardness of these composites before and after immersion in alcohol containing mouthrinse (Listerine), alcohol-free mouthrinse (Oral-B) and experimental herbal mouthrinses based on plant extract (mouthrinses X, Y and Z)

Sixty disc-shaped specimens of 10mm diameter and 2mm thickness were made from each resin composite (Spectrum®TPH®-Dentsply/Caulk,USA, Filtek™Z350(3M ESPE, Dental Products, St.Paul Minn, USA, Ceram·X mono-Dentsply/Caulk,USA and Ceram·X duo-enamel shade-Dentsply/Caulk,USA). Composite materials was packed into a perspex split mould and was cured with a visible light curing unit (Spectrum 800, Dentsply/ Caulk USA) for 40 seconds. The top cured surface was then polished using Sof-Lex pop-on polishing discs (3M ESPE Dental products, St.Paul Minn USA). The specimens were then stored for 24 hours in distilled water in an incubator with a temperature of 37º C. The specimens were randomly divided into six groups. The top surface of each specimen was measured for microhardness before immersion (control group) at a load of 200g for 15 seconds using Vickers microhardness tester, model Shimadzu (Shimadzu Corp, Kyoto, Japan) The specimens were then immersed in 20ml of five different types of mouthrinses (Listerine, Oral B- Tooth and gum care alcohol-free mouth rinses, experimental mouthrinses X, Y and Z) and distilled water and stored for 24 hours at 37º C. Then, the microhardness was recorded again. Data collected was analyzed using one-way ANOVA, univariate analysis of variance and Games-Howell post-hoc test for multiple comparisons between groups.

Filtek Z350 showed the highest VHN (92.63) and Ceram•X Duo-enamel shade had the lowest VHN (72.83) for specimen before immersion (control group). Dunnet-t double sided test showed mean VHN of control group were significant higher than test groups but there was no significant difference of mean VHN between various types of mouthrinses.

All tested composite showed significant decreased in surface microhardness numbers compared to before immersion. All mouthrinses including distilled water showed to have some effect on the surface microhardness of the composites. The result illustrate that not only alcohol could soften the composite but the plant extract and distilled water also had effect on surface microhardness of composite restorative materials. There was no significant difference of mean VHN between various mouthrinses. The softening of composite may be due to the effect of water and not the mouthrinses. All three types of plant extract mouthrinses seem to have an effect on surface microhardness of Ceram•X Mono, however it was not statistically significant. The softening of composite was material dependent.

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