

31st International Conference on

DENTAL SCIENCE & ADVANCED DENTISTRY

June 25-26, 2018 | Vancouver, Canada

Effect of chloroform, eucalyptol and orange oil solvents on the microhardness of human root dentin

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This study aimed to assess the effect of chloroform, eucalyptol and orange oil solvents on the microhardness of human root dentin. 68 single-rooted single-canal extracted human premolar teeth were used. Tooth crowns were separated from the roots at the cemento-enamel junction (CEJ). Roots were buccolingually sectioned into mesial and distal halves. Specimens were randomly divided into 5 groups, with 20 teeth in each solvent group and 4 teeth in each control group. Primary microhardness of specimens was measured using Vickers microhardness tester. Specimens were exposed to solvents for 15 minutes and were subjected to microhardness testing again. Data were recorded and analyzed using repeated measure ANOVA. No significant difference was found in dentin microhardness before and after exposure to solvents in any of the orange oil, eucalyptol, chloroform or saline groups ($P=0.727$). None of the experimental groups showed any significant difference in terms of dentin microhardness reduction ($P=0.99$) and had no significant difference with the negative control group. This study showed that chloroform, eucalyptol and orange oil as gutta-percha solvents did not decrease the microhardness of root dentin. Thus, none of the mentioned solvents has any superiority over the others in terms of affecting dentin properties.

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