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In vitro evaluation of the effectiveness of different organic solvents in Gutta-percha removal

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Abstract

Objective: The objective of this study was to evaluate the effectiveness of eucalyptus oil, orange oil and orange liquid in removing gutta-percha in the endodontic retreatment. **Methods**: Forty human mandibular incisors with single straight root canals were prepared with ProTaper Next (up to size x3) and filled by cold lateral condensation with gutta-percha and Ad Seal Filler (Prevest Dent Pro Limited, Digiana, India). After filling the roots were incubated for 1 month at 37ºC and 100% humidity. The 40 teeth were divided into one control group and 3 retreatment groups (n = 10 each). Gutta-percha was removed using K-files and different solvents: orange oil, eucalyptus oil, orange liquid. After retreatment roots were longitudinally separated and examined by Carl Zeiss Stemi 2000cs stereomicroscope with Image Recording Camera AxioCam Mrc5. The resulting data was processed by Axio Vision 4.7 Image Analysis. Measure the area of the canals and the remaining gutta-percha areas along the entire canal. Analyzed using statistical package SPSS 20 at a statistically reliable level keeping $p < 0.05$. **Results**: No statistically significant differences were found between orange oil, orange liquid and eucalyptus oil in softening gutta-percha ($p > 0.05$). However, the control group had the maximum amount remaining filling material ($p<0.05$). **Conclusion**: The use of solvent statistically significant reduces the amount of remaining filling material in the root canal. Orange oil is best solvent in the coronal and middle third. In the apical third the most effective solvent is eucalyptus oil.