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# Effect of antioxidants agents on Dentinal Tubular Penetration of EndoREZ sealer on sodium hypochlorite-treated root canal dentin: A Scanning electron microscopic study

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According to ISO, the canals were enlarged to a size 30, 6% taper with ProTaper gold (Dentsply Sirona, Ballaigues, Switzerland) by crown down technique (Singh et al., 2015).Irrigation was performed with Saline and 17% EDTA in Group I. After biomechanical preparation, groups II, III, IV, and V were irrigated with 5 mL-Sodium hypochlorite (5.25%) and 5 mL-EDTA (17%) for 1 minute.
Irrigation was done on Groups III, IV, and V for an additional 10 minutes with 10% Ellagic acid, 5% Lycopene extract, and 5% Grape Seed Extract, respectively. After irrigation, the root canals were dried. The EndoREZ (Ultradent Products, Inc., South Jordan, Utah, USA) was used in the canals using a 25-size spreader (Mani Inc., Tochigi, Japan), followed by warm vertical condensation.
**Scanning Electron Microscope Analysis**: The specimens were longitudinally sectioned. Then samples were immersed in 17% EDTA solution for 10 minutes, immersed in 5.25 percent sodium hypochlorite for 10 minutes, and lastly washed entirely with water to remove and smear the layer. Carbon sputtering was performed in the middle and apical thirds of the root canal to aid SEM (500x magnification) evaluation.

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To study the penetration of antioxidant agents within the dentinal tubules, scanning electron microscopy was used. (Figure 1) The mean and standard deviation of dentinal tubular penetration of EndoREZ sealer was assessed. Out of all the groups analyzed, group V (Grape Seed Extract) showed higher dentinal tubular penetration in both the middle third and apical third of the root canal with a mean value of 742.99µm and 460.21 µm respectively ($p<0.05$).Among all groups, group II (5.25% NaOCl+17%EDTA) showed the least dentinal tubular penetration at the middle third of the root canal (60.15µm) as well as in the apical third of the root canal (24.86µm).

Extracted mandibular premolars (n=50) were taken. The samples were randomly divided into 5 groups

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## Methodology

1 Extracted mandibular premolars (n=50) were taken. The samples were randomly divided into 5 groups. These samples were autoclaved, later decoronated using a sectioning disc to attain a 14-mm length of the root from the apex, segregated into five groups.To prevent apical extrusion, sticky wax was used to seal the apex of each root. Using an initial 10 K file (Dentsply Sirona, Ballaigues, Switzerland), the precise working length was determined, which was confirmed further by intraoral radiographs.



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