# Continuous Chelation Agent Usage in Endodontics for Pulp Revascularization

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## Abstract

**Introduction:** Endodontic treatment aims to eliminate pulp tissue, microorganisms, and toxins while creating an environment conducive to tissue revitalization and regeneration. Sodium hypochlorite is considered the most Popular irrigant.

Dual Rinse HEDP as an irrigation additive Was recently introduced when added to naocl in a single irrigating solution simplifies chemical root canal cleaning and Dentin conditioning for the subsequent root canal Fillings and shortens the time required for Effective root canal irrigation.

**Aim:** Compare efficacy of Dual Rinse HEDP with sodium hypochlorite to sodium hypochlorite in combination with a finishing rinse with 17% EDTA solution to remove the smear layer and investigates the cytotoxicity, cell proliferation, adhesion to dentin, of cells exposed to Dual Rinse HEDP in comparison to sodium hypochlorite (2.5%) for 1, 5, and 15 min

**Methodology**: For smear layer assessment: Sixteen human maxillary single-rooted, single canalled sound premolars were used. Specimens were distributed into 2 groups of 8 specimens each : Group 1 50% NaOCl followed by 17% EDTA. Group 2 The Dual Rinse® HEDP mixed with 50% NaOCl. Roots were prepared for SEM appraisal. The smear layer was assessed and scored.

For cytotoxicity assessment: Samples were assigned to groups based on the irrigant used: control, HEDP or sodium hypochlorite (2.5%) for exposure durations of 1, 5, and 15 min. Cytotoxicity was assessed using the MTT assay, with optical density measured at the specified times. Cell proliferation was evaluated via the Trypan blue exclu- sion test, with viable cells counted using a hemocytometer.

All Data were tabulated and statistically analyzed

Cell adherence to dentin discs was analyzed using scanning electron microscopy (SEM) after 5-min irrigant exposure.

**Results:** Smear layer was reduced with The Dual Rinse® HEDP group. No difference was present in between the different regions within Dual Rinse® HEPD group. Cell cytotoxicity differed significantly across groups ($p < 0.05$), with HEDP showing the best results at 1 and 5 min. After 15 min.

**Conclusions:** The Dual Rinse HEDP can be used as one step irrigant in regeneration protocols.