

TOPIC:

**A comparative evaluation of intra-radicular smear removal efficacy of chitosan, 17% edta and 10% citric acid used as final rinse in irrigation protocols – a field emission scanning electron microscopic study**

ABSTRACT:

**Aim:** This study aims to compare the smear layer removal efficacy of the chelating agent chitosan(C), 10% citric acid(CA) and 17% ethylenediamine tetraacetic acid(EDTA) when used in specific irrigant protocols. **Methods:** Eighty single rooted maxillary incisors and canines were decoronated, standardized to a length of 15mm and prepared with rotary files upto protaper F3 size. Sodium hypochlorite was used as the initial rinse [1ml]. The samples were divided into experimental [Group III, IV, V, VI,VII, VIII and IX] (n=10) and control groups [ I-EDTA, II-Normal saline] (n=5) based on the type of final rinse solution [ 5ml] used ie., 2% C – low molecular, 1% C - Shrimp shell, 1% C – Crab shell, 4% C- oligosaccharide, 4% C- citrate, 10% CA, and 1% Acetic acid. Samples were dehydrated, split buccolingually, sputter coated and examined in Field Emission Scanning Electron microscope. **Results:** **Group VII** presented the least amounts of smear among the experimental groups at the apical, middle and coronal one-thirds of the root canal with a mean value of **1.53 ±0.42** there was no statistically significant difference (  $p > 0.05$  ) **Conclusion :** The use of C- citrate and C-oligosaccharide as final rinse solution during bio-mechanical preparation seems promising.

**Key Words:** Smear layer, Final rinse, Chelation, Chitosan, 17% EDTA, 10% Citric acid, Field Emission Scanning Electron Microscope