

ABSTRACT

Background: Smear layer is a debris consisting of organic and inorganic particles of calcified tissue, necrotic tissue, a process odontoblast and microorganisms, that can close the entrance to the dentin tubuli. Research shows a smear layer will impede the penetration of disinfection materials and sealers to the dentin tubuli and reduce attachment of the root canal filling material so that needed root canal irrigation solution which can dissolve the smear layer. Australian pine leaves extract (*Casuarina equisetifolia*) contain saponin compounds that are as surfactants which can dissolve the smear layer, but until now have not known the effective concentration of Australian pine leaves extract (*Casuarina equisetifolia*). **Purpose:** This study was to determine the effective concentration of the cleaning power of Australian pine leaves extract (*Casuarina equisetifolia*) can clean the root canal walls of the smear layer. **Methods:** Thirty extracted premolar human teeth with straight single roots were randomized into 5 groups ($n=6$). The specimens were shaped by using rotary instruments up to a size 25/.06. During instrumentation, each canal was irrigated with Australian pine leaves extract with different concentrations according to each group, and a control group irrigated with Sodium hypochlorite 2.5%. After that, observed the results of root canal cleanliness by using scanning electron microscope (SEM). **Result:** There were significant differences between each group ($p<0,05$), except in the irrigated group Australian pine leaves extract (*Casuarina equisetifolia*) with a concentration of 15% and Sodium hypochlorite 2.5% ($p>0,05$). **Conclusion:** Australian pine leaves extract (*Casuarina equisetifolia*) with a concentration of 20% effective for cleaning the root canal walls of the smear layer.

Keywords : Australian pine leaves extract (*Casuarina equisetifolia*), smear layer, saponin, surfactan