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THE ANTIBACTERIAL EFFECT OF VARIOUS CALCIUM HYDROXIDE PREPARATIONS

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ABSTRACT

The antibacterial activity of four non-settings $Ca(OH)_2$ paste - Metapaste, powder /liquid, Ultracal, and Calcept - was evaluated against four different bacteria (Escherichia coli, Pseudomonas aeruginosa, Staphylococcus aureus, and Enterococcus faecalis). Activity was assessed using the two-layer agar diffusion technique. Four wells were made on each plate. Each well was filled with one of the four materials. Three duplicate plates were used for each sample. The inoculated plates were incubated at 37°C for 24 hours. Then, the zones of bacterial inhibition were measured. The results showed that all bacterial strains were inhibited by the four different $Ca(OH)_2$ formulas. There was no statistically significant difference between the materials. However, there was a statistically significant difference between the different bacteria within each material.

INTRODUCTION :

Microorganisms are present in teeth with pulpal necrosis with or without apical periodontitis. They may be found in the root canal or dentinal tubules, in apical ramifications, cementum, or areas of root resorption[1,2] and are largely responsible for development of apical periodontitis[2]. In these locations, bacteria may remain viable even after three dimensional cleaning and shaping of root canal system. Therefore, the elimination of microorganisms, their products, and subproducts from these tissues is essential for tissue repair and successful endodontic treatment [3].

Concern with the effects of infection on periapical tissue after pulp necrosis has motivated research for effective therapeutic agents. Studies on antimicrobial action and induction of tissue repair by intracanal medications have shown calcium hydroxide ($Ca(OH)_2$) to be the best option [4,5].

Sjogren et al.[6] have reported that a 7 day intra canal dressing with $Ca(OH)_2$ efficiently eliminated bacteria that survived after chemomechanical preparation of the root canal. On the other hand Byström et al.[7] reported that a 30 day application of $Ca(OH)_2$ effectively eliminated bacteria in root canals. Different vehicles have been added to calcium hydroxide in an attempt to enhance its antimicrobial activity. A variety of calcium hydroxide preparations were recently introduced to the market as temporary root canal filling materials for medication. The purpose of this study was to evaluate and compare the antibacterial effect of various calcium hydroxide preparations.

MATERIALS AND METHODS:

The antimicrobial activities of four calcium hydroxide preparations were tested against four standard strains, Escherichia coli ATCC 25922, Staphylococcus aureus ATCC 25423, En-

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