"AN *IN VITRO* COMPARISON OF ANTIMICROBIAL EFFICACY OF THREE ROOT CANAL IRRIGANTS - BIOPURE MTAD, 2% CHLORHEXIDINE GLUCONATE AND 5.25% SODIUM HYPOCHLORITE AS A FINAL RINSE AGAINST *ENTEROCOCCUS FAECALIS*."

by

DR. KANUPRIYA DHINGRA

Dissertation Submitted to the
Rajiv Gandhi University of Health Sciences, Karnataka, Bangalore

In partial fulfillment
of the requirements for the degree of

MASTER OF DENTAL SURGERY (M.D.S.)

in

CONSERVATIVE DENTISTRY & ENDODONTICS

Under the guidance of

Dr. BALARAM NAIK
Professor & Head

DEPARTMENT OF CONSERVATIVE DENTISTRY & ENDODONTICS
S.D.M. COLLEGE OF DENTAL SCIENCES & HOSPITAL, DHARWAD

April 2012

ABSTRACT

Background and Objectives: *Enterococcus faecalis* is one of the most resistant intra canal species and a possible cause of root canal failure. Several irrigants have been recommended for its elimination. Sodium hypochlorite, the routine agent, is cytotoxic. Chlorhexidine has also been suggested for its antibacterial effects and lower cytotoxicity, but its efficacy as an irrigant needs to be evaluated. BioPure MTAD a new irrigant has shown antibacterial properties. This study was conducted to evaluate the antimicrobial activity of 5.25% NaOCl, 2% CHX and Biopure MTAD when used as a final rinse against *E. faecalis*.

Method: 60 single rooted premolars were biomechanically prepared and inoculated with *E. faecalis* suspensions and incubated for 24 hours. The specimens were then divided into 5 groups – positive control (n=10); negative control (n=5); 5.25% NaOCl (n= 15); 2% CHX (n=15); BioPure MTAD (n=15).These were then irrigated with the test irrigants for 5 minutes. After irrigation microbial samples were taken from the root canals using paper points and cultured on BHI broth and evaluated for bacterial growth. These were subjected to further tests to confirm the growth of *E. faecalis*. Another set of samples was taken from the tooth specimens after 48 hours of irrigation to test the long term antibacterial activity.

Results: Bacterial growth after 5 minutes of irrigation was seen in one sample of the MTAD group, 13 samples of the CHX group and 3 samples in the NaOCl group. The second set of samples showed growth in one sample of the MTAD group, 6 samples of the CHX group and 1 sample of the NaOCl group. Statistical analysis showed that there was a significant difference between the antibacterial activiti of Biopure MTAD 2%