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"SPECTROPHOTOMETRIC ANALYSIS OF TOOTH DISCOLORATION AFTER TREATMENT WITH VARIOUS MINERAL TRIOXIDE AGGREGATE BASED MATERIALS : AN *IN VITRO* STUDY".

by

Dr. Urjita Patil

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Under the guidance of

Dr. Mahantesh Yeli

Head and Professor

Dr. Sharmila Tapashetti

Assistant Professor (Co-Guide)

DEPARTMENT OF CONSERVATIVE DENTISTRY & ENDODONTICS

S.D.M. COLLEGE OF DENTAL SCIENCES & HOSPITAL, DHARWAD

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ABSTRACT

Objectives : To evaluate and compare tooth discoloration after treatment with various Mineral Trioxide Aggregate based materials – Grey MTA Plus, White MTA Plus and NeoMTA Plus using a digital spectrophotometer.

Methods and methodology : Disc discoloration experiment -6 discs of diameter 20mm x 2mm were prepared from 3 different Mineral Trioxide Aggregate based materials – Grey MTA Plus (Avalon Biomed, Brandenton, FL, USA), White MTA Plus (Prevest Denpro, Jammu, India) and NeoMTA Plus (Avalon Biomed, Brandenton, FL, USA). 3 MTA discs were immersed in glycerine and subjected to irradiation using a Bluedent LED curing light for 15 minutes and 30 minutes and color change was evaluated. 3 MTA discs were immersed in sodium hypochlorite solution and evaluated for discoloration after 24 hours. Tooth discoloration experiment – One hundred and twenty single rooted teeth were decoronated and coronal pulp chambers were thoroughly debrided. They were randomly segregated into 4 groups (n=30) and retrofilled with MTA test products. Group 1 – NeoMTA Plus Group; Group 2 – White MTA Plus Group; Group 3 – Grey MTA Plus Group; Group 4 – Unfilled Control Group. Base of specimens was sealed using light cure glass ionomer cement. Specimens were stored in well plates in artificial saliva and exposed to natural sunlight. Color change was evaluated using a digital spectrophotometer at 1 day, 1 week, 2 weeks, 4 weeks, 8 weeks, 12 weeks and 16 weeks. Data was submitted to one way ANOVA and Scheffé post hoc test.

Results : Distinct color change was observed in disc discoloration experiment for Grey MTA Plus and White MTA Plus, however, color change was minimal for NeoMTA Plus. In tooth

discoloration experiment, NeoMTA Plus showed significantly less staining of tooth structure over 16 weeks as compared to other MTA test products.

Conclusion : Due to minimal discoloration observed in tooth structure, NeoMTA Plus (containing tantalum oxide as radiopacifier) can be used as a suitable alternative to Grey MTA Plus and White MTA Plus (containing bismuth oxide as radiopacifier) in areas of esthetic concern.

Keywords : Bismuth oxide, mineral trioxide aggregate, NeoMTA Plus, tantalum oxide, tooth discoloration