

Research Report

EMOFLUOR® *DESENS GEL PROFESSIONAL* for the treatment of dentin hypersensitivity: Fluid Flow Measurements and Dentine Tubules Occlusion

Introduction

Dentine hypersensitivity (DH) is widely believed occurring as a result of fluid flow within exposed dentinal tubules in the tooth surface. Most treatments are designed to occlude these tubules.

Aim of the study

This study investigates the ability of EMOFLUOR® *DESENS GEL PROFESSIONAL* to occlude dentinal tubules by scanning electron microscopy (SEM) and by measuring the fluid flow through human dentine sections. Tubule occlusion before and after application of gel was assessed.

Results

EMOFLUOR® *DESENS GEL PROFESSIONAL* exhibited very good tubule occlusion and reduced fluid flow with a mean of 55.1% ($\pm 12.5\%$). In conclusion, EMOFLUOR® *DESENS GEL PROFESSIONAL* is very effective in occluding dentinal tubules and in reducing fluid flow also in comparison with leading brands¹.

Reference

¹Chen, X., Gillam, D. G., et al. (2014). Dentine Tubule Occlusion of a Novel Self-assembling Peptide Containing Gel. Abstract from IADR 92nd General Session, 2014, Cape Town, South Africa

Dentinal Tubules Occlusion

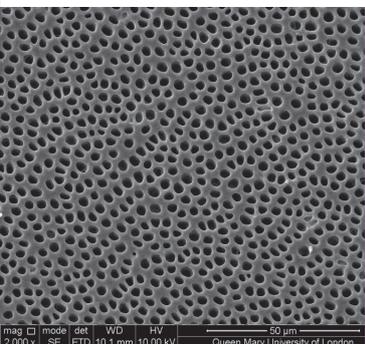
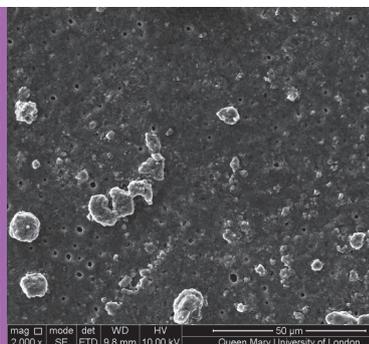


Image of untreated dentin (SEM, mag 2000x)



Picture showing occlusion of dentin tubules with EMOFLUOR® *DESENS GEL PROFESSIONAL* (SEM, mag 2000x)

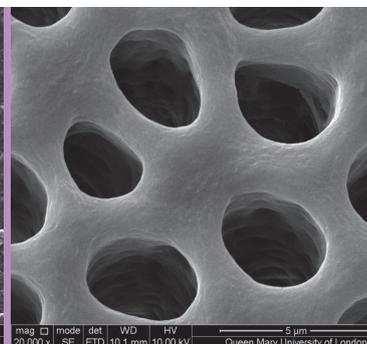
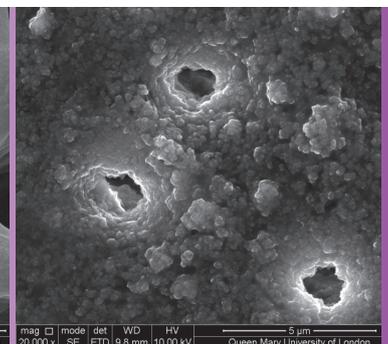


Image of untreated dentin (SEM, mag 20 000x)



Picture showing occlusion of dentin tubules with EMOFLUOR® *DESENS GEL PROFESSIONAL* (SEM, mag 20 000x)



Materials and Methods (Fluid Flow Simulations)

Mid-coronal dentine discs, cut from large caries free human molars were divided in two. One half acting as control and the other half was treated with EMOFLUOR® **DESENS GEL PROFESSIONAL**. Each dentine disc-half was placed in the fluid flow chamber. Pressure was applied and fluid flow rate was recorded with 1 minute's interval. A continuous 10

minutes measurement was carried out. The amount of fluid passed through the dentine disc was plotted against time, where a linear correlation between test (EMOFLUOR® **DESENS GEL PROFESSIONAL**) and control (no treatment) was expected. The slope of the linear relationship was the fluid flow-rate and the relationship between the two flow-rates the reduction.

Fluid Flow Rate Reduction

Experimental Number	Flow Rate – Control	Flow Rate – Test	Flow Rate Reduction (%)
1	0.4405	0.1618	64.0
2	1.4802	0.3573	65.7
3	0.4882	0.3032	39.4
4	1.4363	0.3814	62.3
5	0.3791	0.2159	43.6
Mean			55.1 (±12.5)

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