

Research Report

CURODONT™ D'SENZ for the treatment of dentin hypersensitivity: Fluid Flow Measurements and Dentine Tubules Occlusion

Summary

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.

This study investigates the ability of CURODONT™ D'SENZ to occlude dentinal tubules. Scanning electron microscopy was used to investigate tubule occlusion before and after application of CURODONT™ D'SENZ. Tubule occlusion was also assessed by measuring the fluid flow through

mid-coronal dentine sections cut from large human molars. The main objective was to assess the ability of CURODONT™ D'SENZ to reduce dentine tubule fluid flow and occlude dentine tubules.

CURODONT™ D'SENZ exhibited very good tubule occlusion following application and reduced fluid flow with a mean of 55.1% ($\pm 12.5\%$).

In conclusion, CURODONT™ D'SENZ is very effective in reducing fluid flow and in occluding dentinal tubules compared with leading brands.

Tubuli Occlusion

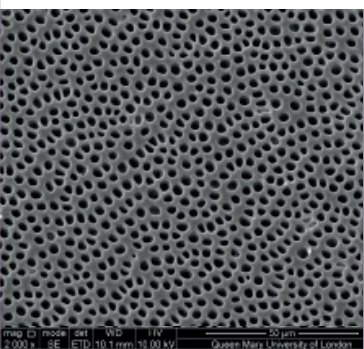
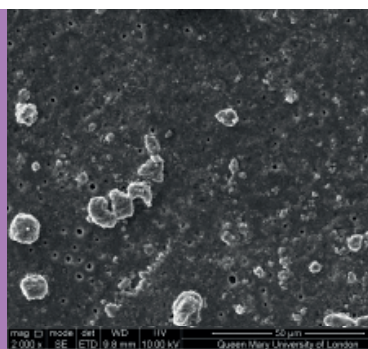


Image of untreated dentin (SEM, mag 2000x)



Picture showing occlusion of dentin tubules with CURODONT™ D'SENZ (SEM, mag 2000x)

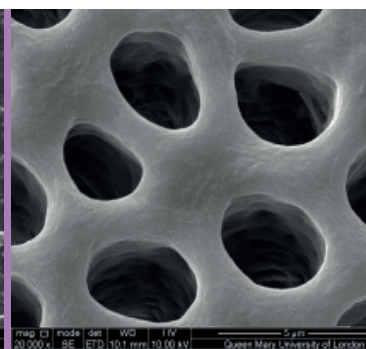
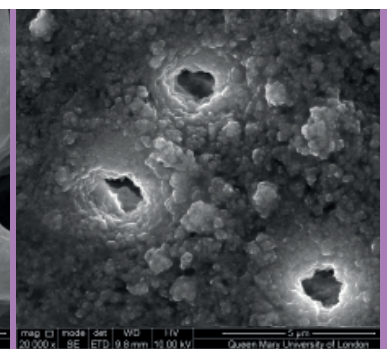


Image of untreated dentin (SEM, mag 20 000x)



Picture showing occlusion of dentin tubules with CURODONT™ D'SENZ (SEM, mag 20 000x)

Fluid Flow Simulations

Dentine discs were cut in two. One half acting as control and the other half was treated with CURODONT™ D'SENZ. 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 (CURODONT™ D'SENZ) and control (no treatment) was expected. The slope of the linear relationship was the fluid flow rate for the as etched dentine disc. The relationship between the two flow rate the 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)



Reference

Chen, X, Gilliam, DG, Mustafa, HA, Lysek, DA, Hill RG (2014) Dentine Tubule Occlusion of a Novel Self-Assembling Peptide Containing Gel, IADR, Cape Town, South Africa