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In-vitro study summary

Fluoride uptake of demineralized human enamel after treatment with professional fluoride interventions



3M™ Clinpro™ Clear Fluoride Treatment

In collaboration with Dr. Frank Lippert
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Introduction

The aim of the study was to investigate the ability of Clinpro Clear Fluoride Treatment to enhance fluoridation of demineralized human enamel in comparison to other professional fluoride interventions.

Study design

4 x 4 mm specimens of human enamel were ground and polished to create flat, planar enamel surfaces and then mounted. The enamel was demineralized using an acidic solution over four days and then rinsed.

Fluoride interventions, control and placebo treatments were applied to groups of specimens according to manufacturer's instructions for use. Treated specimens were incubated in artificial saliva per the treatment times indicated by the manufacturer—15 minutes or 4 hours, respectively. Following this initial incubation period, the test materials were removed from the specimens and further incubated until a total of 24 hours had elapsed.

For example, specimens with a Clinpro Clear Fluoride Treatment application were incubated for 15 minutes after which the treatment was removed. Incubation in artificial saliva for an additional twenty-three hours and 45 minutes was completed prior to fluoride uptake measurements. All specimens were sampled after incubation for 24 hours to determine fluoride uptake using a microbiopsy technique of the enamel at a depth of 100µm and reported in µgF/cm^3.

Test materials

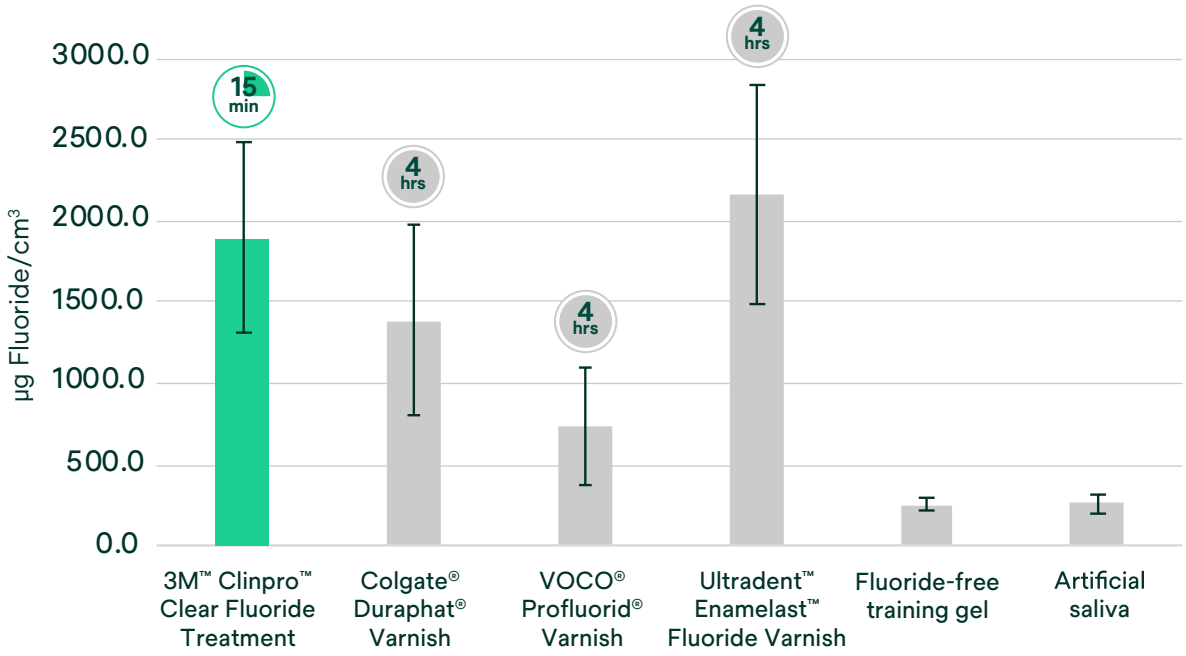
Group	Product name
A	3M™ Clinpro™ Clear Fluoride Treatment
B	Colgate® Duraphat® Varnish
C	VOCO® Profluorid® Varnish

Group	Product name
D	Ultradent™ Enamelast™ Fluoride Varnish
E	Fluoride-free training gel (placebo)
F	Artificial saliva (negative control)

Results

3M™ Clinpro™ Clear Fluoride Treatment and Ultradent™ Enamelast™ Fluoride Varnish were the most effective in promoting fluoride uptake with no significant difference between both interventions. Colgate® Duraphat® Varnish was less effective than Enamelast Fluoride Varnish and Clinpro Clear Fluoride Treatment but more effective than VOCO® Profluorid® Varnish, artificial saliva, and fluoride-free training gel. There was no significant difference between VOCO Profluorid Varnish, artificial saliva, and fluoride-free training gel.

Fluoride uptake in human enamel



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