

ABSTRACT

APF contains acids that can affect changes in the structure and characteristics of resin-based fissure sealant. One of the characteristics that can be affected is surface hardness. Changes in surface hardness are an indicator of the possibility of failure due to abrasion. This study aims to determine the effect of APF on changes in the surface hardness of resin-based fissure sealant.

This study is a true experimental with a pretest-posttest with control group design. Samples are resin-based fissure sealant with a diameter of 8 mm and a thickness of 2 mm (n = 32). The resin-based fissure sealant used is Clinpro Sealant. The sample was divided into two groups: the first group was applied APF for 30 minutes each day for 2 days and the second group was immersed in artificial saliva for 2 days as a negative control. Changes in surface hardness are obtained by measuring the difference between the initial and final hardness using the Vickers microhardness tester.

Changes in surface hardness are compared using an independent T-test. The results obtained APF application significantly affects the change in surface hardness of resin-based fissure sealant ($p < 0.05$).

APF affects changes in surface hardness by decreasing the surface hardness of resin-based fissure sealant. The use of APF in teeth with resin-based fissure sealants is not clinically recommended.

Keywords: *fissure sealant, resin based fissure sealant, surface hardness, topical fluoride application, acidulated phosphate fluoride*

ABSTRAK

APF mengandung asam yang dapat mempengaruhi perubahan struktur dan karakteristik *fissure sealant* berbasis resin. Salah satu karakteristik yang dapat terpengaruh adalah kekerasan permukaan. Perubahan kekerasan permukaan menjadi salah satu indikator adanya kemungkinan kegagalan restorasi akibat abrasi. Penelitian ini bertujuan untuk mengetahui pengaruh APF terhadap perubahan kekerasan permukaan *fissure sealant* berbasis resin.

Penelitian ini merupakan penelitian *true experimental* dengan rancangan *pretest-posttest with control group*. Sampel *fissure sealant* berbasis resin dengan diameter 8 mm dan tebal 2 mm (n=32). *Fissure sealant* berbasis resin yang digunakan adalah *Clinpro Sealant*. Sampel dibagi menjadi dua kelompok: kelompok pertama diaplikasikan APF selama 30 menit per hari selama 2 hari dan kelompok kedua direndam dalam saliva buatan selama 2 hari sebagai kontrol negatif. Perubahan kekerasan permukaan didapatkan dengan pengukuran selisih kekerasan awal dan akhir dengan menggunakan Vickers *microhardness tester*.

Perubahan kekerasan permukaan dibandingkan dengan menggunakan *independent T-test*. Hasil didapatkan aplikasi APF secara signifikan mempengaruhi perubahan kekerasan permukaan *fissure sealant* berbasis resin ($p < 0,05$).

APF dapat mempengaruhi perubahan kekerasan permukaan berupa penurunan kekerasan permukaan *fissure sealant* berbasis resin. Penggunaan APF pada gigi dengan *fissure sealant* berbasis resin tidak disarankan secara klinis.

Kata kunci : *fissure sealant*, *fissure sealant* berbasis resin, kekerasan permukaan, topikal aplikasi fluor, *acidulated phosphate fluoride*