

Pengaruh penambahan fluor dalam proses PILP terhadap remineralisasi intrafibril dan ektrafibril kolagen dentin: analisis TEM/SAED = The influence of fluoride addition into PILP process towards intrafibrillar and extrafibrillar dentin collagen remineralization: TEM/SAED Analysis

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Abstrak

Latar Belakang : Penambahan fluor ke dalam proses PILP memiliki potensi meningkatkan remineralisasi intrafibril dan ektrafibril kolagen dentin. Tujuan : Penelitian ini bertujuan untuk mengetahui pengaruh penambahan fluor dalam proses PILP terhadap remineralisasi intrafibril dan ektrafibril kolagen dentin. Metode : 8 sampel blok dentin dibagi ke dalam 4 kelompok: Kelompok 1 demineralized dentin sebagai kontrol, kelompok 2 demineralized dentin disimpan dalam larutan remineralisasi PILP yang ditambahkan fluor 5 ppm, kelompok 3 demineralized dentin disimpan dalam larutan remineralisasi PILP yang ditambahkan fluor 25 ppm, kelompok 4 demineralized dentin disimpan dalam larutan remineralisasi PILP tanpa fluor (0 ppm) Kemudian seluruh sampel disimpan dalam shaking incubator pada suhu 37°C selama 14 hari. Selanjutnya dilakukan pemeriksaan dengan TEM/SAED untuk melihat remineralisasi intrafibril dan ektrafibril kolagen dentin dan kristalinitas kristal yang dihasilkan. Hasil : Terjadi remineralisasi intrafibril dan ektrafibril kolagen dentin pada kelompok perlakuan 2, 3, dan 4. Remineralisasi intrafibril dan ektrafibril terlihat paling padat pada kelompok 2. Terdapat perbedaan kristalinitas kristal di antara kelompok 1, 2, 3, dan 4. Kesimpulan: Penambahan fluor 5 ppm ke dalam proses PILP menghasilkan remineralisasi intrafibril dan ektrafibril kolagen dentin. Remineralisasi yang dihasilkan berupa kristal apatit dengan tingkat kristalinitas yang padat.

.....Background: Fluoride addition into PILP process has the potential to increase intrafibrillar and extrafibrillar dentin collagen remineralization. Objective: This research aim to evaluate the influence of fluoride addition into PILP process towards intrafibrillar and extrafibrillar dentin collagen remineralization. Methods: 8 dentin blocks were divided into 4 sample groups. Group 1 (demineralized dentin) as control group, group 2 is demineralized dentin that were soaked in PILP process with 5 ppm fluoride addition, group 3 is demineralized dentin that were soaked in PILP process with 25 ppm fluoride addition, and group 4 is demineralized dentin that were soaked in PILP process with no fluor (0 ppm) addition. All of the samples were incubated in shaking incubator at 37o C for 14 days. Result: Intrafibrillar and extrafibrillar dentin collagen remineralization occurred in group 2, 3, and 4. The most dense intrafibrillar and extrafibrillar dentin collagen remineralization was seen in group 2. There are differences of crystal's crystallinity between group 1, 2, 3, and 4. Conclusion: 5 ppm fluoride addition into PILP process produced intrafibrillar and extrafibrillar dentin collagen remineralization. The remineralization were consisted by high-density apatite crystals.