Efek Remineralisasi Menggunakan Analog Protein Non Kolagen Carboxymethyl Chitosan/Amorphous Calcium Phosphate Pada Demineralized Dentin (Eksperimental Laboratorik) = Remineralization Effect of Non Collagen Protein Carboxymethyl Chitosan/Amorphous Calcium Phosphate on Demineralized Dentin (In Vitro)

Atria Mya Kelani, author

Abstrak

Latar Belakang: Affected dentin merupakan lapisan yang ditinggalkan pada perawatan karies secara minimal invasif karena dapat diremineralisasi. Lapisan ini masih terdapat ikatan silang kolagen yang intak meskipun, mineral apatit telah hilang. Remineralisasi dentin diregulasi oleh protein non kolagen Dentin Matriks Protein 1 (DMP1). Remineralisasi yang dihasilkan berupa remineralisasi intrafibrilar dan ekstrafibrilar. Remineralisasi intrafibrilar meningkatkan sifat fisik dentin. Guided Tissue Remineralization (GTR) merupakan metode remineralisasi dentin secara intrafibrilar dan ekstrafibrilar menggunakan material analog protein non kolagen. Material ini memiliki fungsi menyerupai DMP1. Salah satu material analog protein non kolagen adalah Carboxymethyl Chitosan/ Amorphous Calcium Phosphate (CMC/ACP). Tujuan: Mengevaluasi remineralisasi dentin pada permukaan demineralized dentin setelah aplikasi material analog protein non kolagen CMC/ACP. Metode: Dua kelompok dilakukan demineralisasi buatan, salah satunya diaplikasikan material CMC/ACP sedangkan, kelompok lainnya tidak diaplikasikan CMC/ACP. Evaluasi remineralisasi dengan SEM dan EDX. Hasil: Terlihat remineralisasi pada permukaan demineralized dentin dan peningkatan kadar kalsium dan fosfat setelah aplikasi CMC/ACP pada hari ke-7. Perbandingan rerata dua kelompok tidak menunjukkan perbedaan bermakna. Kesimpulan: CMC/ACP memiliki potensi untuk meremineralisasi demineralized dentin.

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Background: Affected dentin is a layer has been left during non invasive caries treatment as it can be remineralized. Collagen crosslinking remains intact in this layer, however the apatite minerals have been lost. Dentin remineralization is regulated by a non collagenous protein, Dentin Matrix Protein 1 (DMP1) and resulting intra- and extrafibrillar remineralization. Intrafibrillar remineralization improves physical properties of dentin. Guided Tissue Remineralization (GTR) is a method of collagen dentin remineralization using non collagen protein analog, resulting in intra- and extrafibrillar remineralization. This material has similar function with DMP1. Carboxymethyl Chitosan/ Amorphous Calcium Phosphate (CMC/ACP) is one of non collagen protein analog.Aim: To evaluate demineralized dentin remineralization after application non collagen protein analog CMC/ACP. Method: Two groups performed artificial demineralization, one of which applied CMC / ACP material whereas, the other group was not applied CMC / ACP. Remineralization was evalutated using SEM and EDX. Result: After 7 days CMC/ACP application, remineralization was observed on the surface of demineralized dentin, which showed a white irregularities surrounding the dentin tubuli. In addition, increasing calcium and phosphate level has been showed experimentally although, the

comparison of both group is insignificant. Conclusion: CMC/ACP has a potential for demineralized dentin remineralization.