Efek Asam Poliaspartik Sebagai Analog Protein Non Kolagen Dalam Proses Polymer-Induced Liquid Precursor (PILP) Terhadap Remineralisasi Intrafibrilar Dentin (Analisis SEM dan EDX) = Remineralization Effect of Poliaspartic Acid as Analog Protein Non Collagenous in Polymer-Induced Liquid Precursor (PILP) on Intrafibrillar Dentin (SEM and EDX)

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Abstrak

Latar Belakang: Remineralisasi pada dentin affected dapat terjadi secara guided tissue remineralization (GTR). Remineralisasi ini terjadi pada matriks intrafibrilar kolagen dentin karena peran protein non kolagen yaitu Dentin Matriks Protein 1 (DMP1) yang dapat rusak saat proses demineralisasi. Dibutuhkan material analog pengganti DMP1 untuk proses remineralisasi, salah satunya adalah asam poliaspartik dalam proses Polymer-Induced Liquid Precursor (PILP). Tujuan: Menganalisis remineralisasi yang terjadi pada demineralized dentin setelah diinduksi oleh asam poliaspartik dalam proses PILP. Metode: Sampel berupa dentin blok direndam pada larutan demineralisasi lalu dibagi menjadi empat kelompok, yaitu kelompok demineralized dentin tanpa perendaman larutan asam poliaspartik dan kelompok dengan perendaman larutan asam poliaspastik selama 3, 7, dan 14 hari. Sampel di evaluasi dengan uji SEM dan EDX. Hasil: Terdapat perbedaan signifikan antara kelompok demineralized dentin dengan kelompok remineralisasi asam poliaspartik pada hari ke 3, 7, dan 14. Remineralisasi yang terjadi berupa deposit ion kalsium dan fosfat. Kesimpulan: Asam poliaspartik dalam proses PILP memiliki potensi untuk meremineralisasi demineralized dentin.

.....Background: Remineralization on affected dentin can be occurred by guided tissue remineralization (GTR) method. The remineralization process took place in intrafibilar matrix dentin collagen which regulated by a non collagenous protein, Dentin Matrix Protein (DMP 1) which can be destroyed during demineralization process. Remineralization process requires non collagenous protein analog material, one in particular is poliaspartic acid in Polymer-Induced Liquid Precursor (PILP) process. Objective: To analyze remineralization process that occured on demineralized dentin after application polyaspartic acid in PILP process. Method: Dentin block sample was soaked in demineralized solution. The sample then divided into four groups which are demineralized dentin without application of poliasparticacid solution, and demineralized dentin soaked in polyaspartic acid solution in the period of 3 ,7 and 14 days. The samples were evaluated by using SEM and EDX. Result: A statistically significant result between demineralized dentin group and remineralization with poliaspartic acid group within 3, 7, 14 days. Remineralization occurred by calcium and phosphate ions deposition. Conclusion: Polyaspartic acid in PILP process has the capability of remineralizing demineralized dentin.