

Pengaruh Penambahan Carboxymethyl Chitosan (CMC) Pada Semen Bioaktif MTA Terhadap Viabilitas Sel Fibroblas = The Effect Of Carboxymethyl Chitosan (CMC) On MTA Bioactive Cement Towards Fibroblast Cell Viability

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Abstrak

Latar Belakang: Perawatan pulpa vital adalah perawatan konservatif yang bertujuan menjaga pulpa tetap sehat pada gigi yang mengalami trauma, karies, prosedur restorasi dan kelainan anatomi. Mineral Trioxide Aggregate (MTA) merupakan bahan bioaktif yang sering digunakan perawatan pulpa vital. Pengembangan MTA dilakukan untuk meningkatkan karakter fisik dan biokompatibilitasnya. Tujuan: Mengetahui pengaruh aplikasi material MTA dan MTA modifikasi carboxymethyl chitosan (CMC) terhadap viabilitas sel fibroblas. Metode: Sel fibroblas yang telah mengalami serum starvation selama 24 jam, diaplikasikan media kultur berupa material bioaktif yang berbeda yaitu MTA, MTA modifikasi CMC 5% dan 10 % serta DMEM sebagai kontrol. Pengaruh viabilitas sel fibroblas 24 dan 72 jam dinilai dan dihitung menggunakan MTT Assay. Analisis data menggunakan uji statistik One-Way ANOVA, dilanjutkan Post Hoc Bonferonni. Hasil: Terdapat perbedaan bermakna viabilitas sel fibroblas pada kelompok MTA, MTA-CMC 5% dan 10% pada periode waktu pengamatan 24 dan 72 jam. Nilai viabilitas terendah terdapat pada kelompok MTA 72 jam sedangkan nilai viabilitas tertinggi terdapat pada kelompok MTA-CMC 5% 24 jam. Kesimpulan: MTA, MTA modifikasi CMC 5% dan 10% memengaruhi viabilitas sel fibroblas pada periode pengamatan 24 dan 72 jam. MTA modifikasi CMC 5% pengamatan 24 jam menghasilkan nilai viabilitas tertinggi dan termasuk kategori material yang tidak toksik.

.....Background: Vital pulp treatment is a conservative treatment designed to keep the pulp healthy in teeth that have experienced trauma, caries, restoration procedures and anatomical abnormalities. Mineral Trioxide Aggregate (MTA) is one of the bioactive materials that is often used for vital pulp treatment. The development of MTA was carried out to improve its physical characteristics and biocompatibility.Objective: To determine the effect of the application of MTA modified carboxymethyl chitosan (CMC) and MTA materials on the viability of fibroblast cells.Methods: Fibroblast cells that had undergone 24 hours serum starvation were cultured in the different media in in every group MTA and MTA modified CMC concentrations of 5% and 10% and DMEM as a control. The effect of fibroblast cell viability at 24 hours and 72 hours was assessed based on the percentage of live cells calculated using the MTT Assay. Then the results obtained were analyzed using the SPSS statistical test. The distribution of the data was normal so that the One-Way ANOVA parametric test was carried out, followed by Post Hoc Bonferonni.Results: MTT Assay test, it was found that there was a significant difference in the viability of fibroblast cells in the MTA, MTA-CMC groups of 5% and 10% in the 24 and 72 hours observation periods. The lowest viability value was found in the MTA group with 72 hours of observation, while the highest viability value was found in the 5% MTA-CMC group with 24-hour observation. Conclusion: MTA, MTA modified CMC 5% and 10% affected the viability of fibroblast cells in the 24-hour and 72-hour observation periods. MTA modified CMC 5% at 24-hour observation resulted in the highest viability value and included in the category of non-toxic material.