

Sitotoksitas Medikamen Kalsium Hidroksida, Triple Antibiotic Paste dan Kombinasi Keduanya Terhadap Sel Punca Pulpa = Cytotoxicity of medicaments Calcium Hydroxide, Triple Antibiotic Paste and their Combination on Pulp Stem Cell

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Abstrak

Latar Belakang: Perawatan endodontik regeneratif (ER) adalah perawatan yang dirancang untuk menggantikan struktur gigi yang rusak secara fisiologis. Penggunaan medikamen pada prosedur perawatan ER menggunakan Calcium hydroxide yang telah ditentukan sebagai bahan medikamen utama yang ditetapkan American Association of Endodontik (AAE). Bahan medikamen lainnya seperti Triple antibiotic paste (TAP) juga banyak digunakan pada perawatan ER dalam konsentrasi 1 mg/ml.

Tujuan: Mengetahui sitotoksitas medikamen Ca(OH)₂, TAP, dan kombinasi keduanya terhadap sel punca pulpa (Cs) yang telah 80% confluent (telah melalui uji stem cell marker CD 90 98%, CD 105 88,7%, CD 73 94%, LinNeg 0,5%) dan mencapai P3-P4 dilakukan starvation 24 jam, diberikan perlakuan berupa Ca(OH)₂, TAP 0,1 dan 1 mg/ml dan kombinasi Ca(OH)₂ dan TAP 0,1 dan 1 mg/ml dengan DMEM sebagai kontrol. Pengamatan viabilitas dan sitotoksitas hDPSCs dengan uji kuantitatif MTT assay dan uji kualitatif pewarnaan DAPI.

Hasil: Tidak terdapat perbedaan sitotoksitas kombinasi medikamen Ca(OH)₂ + TAP 0,1 mg/ml dan Ca(OH)₂ + TAP 1 mg/ml dibandingkan dengan Ca(OH)₂, TAP 0,1 mg/ml dan TAP 1 mg/ml terhadap sel punca pulpa.

Kesimpulan: Bahan medikamen Ca(OH)₂, TAP, dan kombinasi keduanya tidak toksik terhadap sel punca pulpa.

.....Background: Regenerative endodontic treatment (ER) is a treatment designed to replace damaged tooth structure physiologically. In regenerative endodontic treatment (ER) procedures, the medicament used is calcium hydroxide, which has been determined as the primary medicament recommended by the American Association of Endodontics (AAE). Another medicament used in ER treatment is Triple antibiotic paste (TAP), typically at a concentration of 1 mg/ml.

Objective: To determine the cytotoxicity of Ca(OH)₂, TAP, and their combination on dental pulp stem cells (hDPSCs).

Methods: Primary human dental pulp stem cells (hDPSCs), which have reached 80% confluence (tested for stem cell markers CD90 98%, CD105 88.7%, CD73 94%, LinNeg 0.5%), and have reached passages 3rd to 4th, were subjected to 24-hour starvation. They were then treated with Ca(OH)₂, TAP at concentrations of 0.1 and 1 mg/ml, and a combination of Ca(OH)₂ and TAP at the same concentrations, with DMEM as the control. The viability and cytotoxicity of hDPSCs were observed using the quantitative MTT assay and qualitative DAPI staining.

Results: There was no significant difference in the cytotoxicity between the combination of Ca(OH)₂+ TAP 0.1 mg/ml and Ca(OH)₂ + TAP 1 mg/ml compared to Ca(OH)₂ 0.1 mg/ml and TAP 1 mg/ml in dental pulp stem cells.

Conclusion: The medicaments Ca(OH)₂, TAP, and their combination are not toxic to dental pulp stem cells.