

# Efek Sodium Thiosulfate Setelah Paparan Irigasi Natrium Hipoklorit Terhadap Viabilitas Sel Punca Pulpa = Effect of Sodium Thiosulfate after Sodium Hypochlorite Irrigation Exposure on Pulp Stem Cell Viability

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## Abstrak

Latar Belakang: Irigasi endodontik konsentrasi tinggi Natrium Hipoklorit (NaOCl) 5% telah banyak dilaporkan menurunkan viabilitas sel punca pulpa (hDPSCs) namun merupakan bahan irigasi pilihan untuk perawatan endodontik. Sehingga dibutuhkan larutan lain untuk menetralkan efek NaOCl seperti Sodium thiosulfate (STS) yang bersifat antioksidan agar potensi anti mikroba NaOCl tetap baik namun tidak mempengaruhi viabilitas sel punca pulpa. Tujuan: Mengetahui efek penggunaan STS 5% setelah paparan NaOCl 1,5% dan NaOCl 5%-PBS-EDTA 17%-PBS dengan variasi paparan waktu terhadap viabilitas hDPSCs. Metode: Sel primer hDPSCs yang telah 80% confluent dan mencapai P3-P4 dilakukan starvation 24 jam, diberikan perlakuan berupa NaOCl-PBS-STS 5%-EDTA 17%-PBS, DMEM sebagai kontrol negatif dan NaOCl 1,5% serta 5% sebagai kontrol positif. Pengamatan viabilitas sel punca pulpa dengan uji flowcitometry MTT-assay. Hasil: Perbandingan antara kelompok NaOCl 5% terhadap kelompok NaOCl 5% - STS 5% 60' berbeda tidak bermakna ( $p>0,5$ ) namun nilai viabilitas kelompok NaOCl 5% - STS 5% 60' lebih tinggi dibanding kelompok NaOCl 5%. Kesimpulan: Sodium thiosulfate sebagai agen antioksidan dan penetralisir NaOCl cukup efektif dalam mempertahankan viabilitas sel punca pulpa pada konsentrasi NaOCl 5% dengan paparan waktu 60'.

.....Background: Endodontic irrigation with high concentrations of 5% Sodium Hypochlorite (NaOCl) has been reported to decrease pulp stem cell viability (hDPSCs) however NaOCl is the irrigant of choice for endodontic treatment. Another solution is needed to neutralize the effects of NaOCl, such as Sodium thiosulfate (STS) an antioxidant that has good antimicrobial but minimally effect on the viability hDPSCS. Objective: To determine the effect of 5% STS after exposure to 1.5% NaOCl and 5% NaOCl-PBS-EDTA 17%-PBS with variations in exposure time on the viability of hDPSCs. Method: hDPSCs that has been 80% confluent and reach P3-P4 done starvation for 24 hour, was given treatment of NaOCl-PBS-STS 5%-EDTA 17%-PBS, DMEM as a negative control and NaOCl 1.5% and 5% as a positive control. Observation of viability by MTT-flow cytometry assay. Results: The comparison between the 5% NaOCl group and the 5% NaOCl - 5% STS 60' group was not significantly different ( $p>0.5$ ) but the viability value of the 5% NaOCl - 5% 60' NaOCl group is higher than 5% NaOCl group. Conclusion: Sodium thiosulfate as an antioxidant agent and NaOCl neutralizer is quite effective in maintaining the viability of pulp stem cells at 5% NaOCl concentration with an exposure time of 60'.