

PENGARUH KONSENTRASI SODIUM TIOSULFAT SEBAGAI BAHAN IRIGASI SALURAN AKAR TERHADAP KEKERASAN MIKRO DENTIN

INTISARI

Sodium hipoklorit memiliki kemampuan antimikroba spektrum luas, eliminasi bakteri, dan melarutkan material organik hingga jaringan nekrotik. Kekurangan bahan ini adalah dapat mendegradasi kolagen dan menyebabkan penurunan kekerasan mikro dentin, yang dapat menyebabkan saluran akar menjadi rapuh bahkan fraktur. Sodium tiosulfat merupakan antioksidan yang dapat menetralkan efek sodium hipoklorit. Tujuan penelitian ini untuk mengetahui pengaruh konsentrasi sodium tiosulfat konsentrasi 5% dan 10% sebagai bahan irigasi saluran akar terhadap kekerasan mikro dentin.

Tiga puluh gigi premolar mandibula akar tunggal dilakukan preparasi biomekanis dengan teknik preparasi *crown down* menggunakan file M3-Pro Gold hingga *M3PG3*. Spesimen dipotong mahkota anatomisnya pada bagian *cemento enamel junction* (CEJ) sehingga menghasilkan potongan akar dengan panjang 14 mm dari apikal. Spesimen dilakukan pemotongan secara longitudinal dengan arah bukal-lingual dan dibagi menjadi 3 kelompok. Seluruh spesimen direndam dalam NaOCl 2,5% selama 5 menit. Spesimen dibagi menjadi kelompok I dalam Na₂S₂O₃ 5%, kelompok II dalam Na₂S₂O₃ 10% dan kelompok III larutan salin. Spesimen dilakukan pengukuran kekerasan mikro dentin dengan alat *Vickers Diamond Microhardness Tester*. Data di analisis dengan ANAVA satu jalur dengan tingkat kepercayaan 95% ($\alpha = 0,05$).

Hasil uji ANAVA satu jalur terdapat pengaruh konsentrasi bahan irigasi ($p < 0,05$) terhadap kekerasan mikro dentin. Hasil uji *LSD* menunjukkan terdapat perbedaan signifikan antara konsentrasi sodium tiosulfat 5% dan 10 % serta konsentrasi sodium tiosulfat 10% dan salin. Kesimpulan penelitian adalah yaitu konsentrasi sodium tiosulfat 10 % menghasilkan nilai kekerasan mikro yang lebih tinggi dibandingkan konsentrasi sodiumtiosulfat 5%.

Kata kunci: konsentrasi, sodium tiosulfat, kekerasan mikro dentin

EFFECT OF SODIUM THIOSULPHATE CONCENTRATION AS ROOT CANAL IRRIGATION ON DENTINE MICROHARDNESS

ABSTRACT

Sodium hypochlorite has broad spectrum antimicrobial ability, eliminates bacteria, and dissolves organic material to necrotic tissue. Shortage of this material is collagen degradation and causes a decrease in dentin microhardness, which can cause the root canal to become brittle and fracture. Sodium thiosulfate is an antioxidant that can neutralize the effects of sodium hypochlorite. The aim of this study was to determine the effect of sodium thiosulphate concentrations of 5% and 10% as root canal irrigants on dentine microhardness.

Thirty single root mandibular premolars were prepared for biomechanical preparation using crown down preparation technique using M3-Pro Gold to M3PG3 file. The specimen's anatomical crown was cut at the cemento enamel junction (CEJ) so as to produce a 14 mm long root cut from the apical. The specimens were cut longitudinally in the buccal-lingual direction and divided into 3 groups. All specimens were immersed in 2.5% NaOCl for 5 minutes. The specimens were then soaked for 5 minutes divided into group I in 5% Na₂S₂O₃, group II in 10% Na₂S₂O₃ and group III in saline solution. Specimens were measured for dentin microhardness with Vickers diamond microhardness tester. The data were analyzed using one way ANOVA with confidence level of 95% ($\alpha = 0.05$).

The results of the one-way ANOVA test showed that the concentration of irrigating agent ($p < 0.05$) had an effect on the micro dentin hardness. The LSD test results showed that there was a difference between the 5% sodium thiosulphate concentration and the 10% concentration and the 10% sodium thiosulfate concentration and saline. There was no significant difference between the concentration of 5% sodium thiosulfate preceded by 2.5% sodium hypochlorite and saline. The conclusion is that a concentration of 10% sodium thiosulfate produces a higher microhardness value than a concentration of 5% sodium thiosulfate.

Keywords: concentration, sodium thiosulphate, dentin microhardness