Pengaruh Larutan Cuka Apel (Malus Pumila Mill) Berbagai Konsentrasi Terhadap Viabilitas Human Dental Pulp Stem Cells (hDPSCs) = The Impact of Apple Cider Vinegar Solutions in Various Concentrations on Viability of Human Dental Pulp Stem Cells (hDPSCs)

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Abstrak

Latar Belakang: Fokus disinfeksi saluran akar telah berubah dari disinfeksi agresif menjadi seleksi protektif dalam prosedur regeneratif endodontik. Larutan irigasi sintetik yang digunakan hingga saat ini toksik terhadap sel punca pulpa, salah satunya yang memiliki kemampuan proliferasi dan transdiferensiasi tinggi adalah hDPSCs. Oleh sebab itu, penelitian terkait disinfeksi berbahan alami yang mampu mempertahankan viabilitas sel punca terus berkembang pesat. Salah satu larutan irigasi alami yang bersifat antimikrobial dan agen kelator adalah larutan cuka apel. Untuk menjadikannya obat herbal terstandar hingga fitofarmaka, perlu diidentifikasi kelompok senyawa kimia dan uji viabilitas hDPSCs.
Tujuan: Menganalisis pengaruh larutan cuka apel berbagai konsentrasi terhadap viabilitas hDPSCs
Metode: hDPSCs ditambahkan DMEM+FBS10% (kontrol negatif), EDTA 17% (kontrol positif), larutan cuka apel dengan konsentrasi 2,5%, 5%, dan 10% dengan enam kali pengulangan. Selanjutnya, persentase viabilitas hDPSCs didapat dari MTT assays melalui microplate reader dalam nilai absorbansi. Data kemudian diolah statistik melalui uji parametrik One-way ANOVA.
Hasil: Nilai rerata viabilitas sel hDPSC pada semua kelompok perlakuan bernilai diatas 70% sehingga tidak toksik menurut standar ISO dengan rerata viabilitas tertinggi pada kelompok 2,5% dan terendah pada kelompok EDTA 17% diikuti kelompok 10%.
Kesimpulan: Larutan cuka apel dapat diidentifikasi kelompok senyawa kimia dan nilai viabilitas sel paling tinggi pada konsentrasi 2,5%.
.....Background: Focus on root canals disinfection have shift from aggressive to protective selection in regenerative endodontic procedures. Synthetic root canals irrigation that had been used until now are toxic toward pulp stem cells, one of them, hDPSCs which have higher proliferation and transdifferentiation ability. Therefore, research on natural disinfection which maintain stem cell viability keep developing rapidly. One of the natural disinfection that has antimicrobial effect and chelating agent is apple cider vinegar. To standardized it as modern medicine, need to identify group of chemical compounds and analyzing the viability percentage of hDPSCs.
Objective: Analyze the impact of apple cider vinegar solution in various concentrations on viability of hDPSCs.

Methods: hDPSCs were given DMEM+FBS10% (negative control), 17% EDTA (positive control), apple cider vinegar solution in 2.5%, 5% and 10% concentrations with six repetitions. Percentage viability of hDPSCs were analyze from MTT assays with microplate reader in absorbance value. Then, data were proccessed statictically with parametric One-way ANOVA.
Results: The average viability of hDPSCs were above 70% which considered non-toxic according to ISO, with the highest cells viability in 2.5% and the lowest cells viability in 17% EDTA followed by 10% groups.

Conclusion: Apple cider vinegar solution’s chemical compounds can be identified with the highest cells viability were at 2.5%.