

Diferensiasi osteogenik sel stromal pulpa gigi pasien celah bibir dan palatum melalui deposisi kalsium = Osteogenic differentiation of dental stromal cells in cleft lip and palate patients by calcium deposition

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Abstrak

Latar Belakang: Celah bibir dan palatum merupakan salah satu kelainan bawaan yang menyebabkan defek jaringan keras sehingga dikembangkan perawatan rekonstruksi tulang berbasis teknik rekayasa jaringan sebagai alternatif perawatan. Sumber sel stromal mesenkim dapat diperoleh dari pulpa gigi sulung dan gigi permanen. Kemampuan diferensiasi osteogenik sel stromal pulpa gigi sulung dan gigi permanen sudah banyak dilaporkan. Pada pasien celah bibir dan palatum, terdapat gen-gen yang diekspresikan berbeda dan kemampuan diferensiasi osteogenik sel stromal pulpa gigi sulung dan gigi permanen pasien celah bibir dan palatum belum diketahui. Tujuan: Mengevaluasi perbandingan kemampuan diferensiasi osteogenik sel stromal pulpa gigi sulung dan gigi permanen pasien celah bibir dan palatum melalui deposisi kalsium. Metode: Sel stromal pulpa gigi sulung dan gigi permanen pasien celah bibir dan palatum dikultur menggunakan medium osteogenik selama 21 hari kemudian dilakukan pewarnaan Alizarin Red dan kuantifikasi terhadap deposisi kalsium. Hasil: Sel stromal pulpa gigi sulung dan gigi permanen yang dikultur menggunakan medium osteogenik menunjukkan adanya deposisi kalsium yang tinggi. Sel stromal pulpa gigi sulung dan gigi permanen tidak menunjukkan perbedaan nilai rerata absorbansi, intensitas pewarnaan, dan area pewarnaan yang bermakna secara statistik ($p < 0,05$). Kesimpulan: Sel stromal pulpa gigi sulung pasien celah bibir dan palatum memiliki kemampuan diferensiasi osteogenik yang ekuivalen dengan sel stromal pulpa gigi permanen pasien celah bibir dan palatum.

.....Background: Cleft lip and palate is one of the most common congenital anomalies resulting in hard tissue defects therefore tissue engineering is currently developed as an alternative treatment. The source of mesenchymal stromal cells can be obtained from human exfoliated deciduous teeth (SHED) and dental pulp (DPSCs). Osteogenic differentiation abilities of SHED and DPSCs have been widely studied. In cleft lip and palate patients, there are several differentially expressed genes and the osteogenic differentiation abilities of SHED and DPSCs in cleft lip and palate patients have not yet been known. Purpose: To compare the osteogenic differentiation abilities of SHED and DPSCs in cleft lip and palate patients by calcium deposition. Methods: SHED and DPSCs isolated from cleft lip and palate patients were cultured using osteogenic medium for 21 days then added Alizarin Red staining and the calcium deposition were quantified. Result: Both SHED and DPSCs that cultured in osteogenic medium demonstrated high calcium deposition. SHED and DPSCs did not show any statistically significant differences in the average absorbance values, staining intensity, and staining areas ($p < 0,05$). Conclusion: SHED and DPSCs in cleft lip and palate patients have equivalent ability of osteogenic differentiation by calcium deposition.