

Kemampuan Diferensiasi Osteogenik Sel Stromal Pulpa Gigi Permanen dan Gigi Sulung Pasien Celah Bibir dan Palatum melalui Ekspresi Gen RUNX-2 = Potential Osteogenic Differentiation Dental Pulp Stromal Cells and Stromal Cells of Human Exfoliated Teeth in Cleft Lip and Palate Patients through RUNX-2 mRNA Gene Expression.

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Abstrak

Latar belakang: Celah bibir dan palatum adalah kelainan bawaan yang mempengaruhi regio orofacial. Perawatan yang menjadi baku emas untuk pasien celah bibir dan palatum adalah autologous bone graft. Namun, perawatan ini masih invasif dan ada beberapa kekurangannya sehingga perlu teknik rekayasa jaringan dengan sel stromal. Sel stromal mesenkim yang terdapat dalam rongga mulut adalah sel stromal pulpa gigi sulung (SHED) dan sel stromal pulpa gigi permanen (DPSC). Kemampuan diferensiasi osteogenik SHED dan DPSC pada subjek normal sudah diketahui. Namun, kemampuan diferensiasi osteogenik dengan ekspresi gen RUNX-2 pada DPSC dan SHED pasien celah bibir dan palatum belum diketahui secara pasti. Tujuan: Membandingkan kemampuan diferensiasi osteogenik sel stromal pulpa gigi permanen pasien celah bibir dan palatum dengan sel stromal pulpa gigi sulung pasien celah bibir dan palatum melalui ekspresi gen RUNX-2. Metode: DPSC celah bibir dan palatum dan SHED celah bibir dan palatum dikultur dengan medium osteogenik dan tanpa medium osteogenik selama 21 hari. Sampel RNA diperoleh kultur sel stromal pulpa gigi permanen (DPSC) dan sel stromal pulpa gigi sulung (SHED) pasien celah bibir dan palatum. Selanjutnya diuji ekspresi gen RUNX-2, dan housekeeping gene 18S dengan Real-Time Polymerase Chain Reaction (RT-PCR). Hasil: Tidak ada perbedaan kemampuan diferensiasi sel stromal pulpa gigi permanen pasien celah bibir dan palatum dengan sel stromal pulpa gigi sulung pasien celah bibir dan palatum melalui ekspresi gen RUNX-2. Kesimpulan: Kemampuan diferensiasi osteogenik sel stromal pulpa gigi sulung pasien celah bibir dan palatum ekuivalen dengan sel stromal pulpa gigi permanen pasien celah bibir dan palatum.

.....Background: Cleft lip and palate are congenital anomalies that affect the orofacial region including lips, alveolar ridge, hard palate, and soft palate. Patients with cleft lip and palate have impaired esthetic and stomatognathic functions. The gold standard treatment for cleft lip and palate patients is an autologous bone graft. However, this treatment is still invasive and has some limitations therefore requires tissue engineering techniques by using stromal cells. Mesenchymal stromal cells that are found in the mouth are stromal cells from human exfoliated deciduous teeth (SHED) and dental pulp stromal cells (DPSC). The osteogenic differentiation of SHED and DPSC normal subjects are well known. Nevertheless, the osteogenic differentiation capacity by RUNX-2 mRNA expression in DPSC and SHED cleft lip and palate patients is still need to be elucidated. Objective: To compare the osteogenic differentiation capacity of stromal cells from human exfoliated deciduous teeth and dental pulp stromal cells in cleft lip and palate patients through RUNX-2 gene expression. Methods: DPSC and SHED cleft lip and palate patients were cultured with and without osteogenic medium for 21 days. RNA sample were collected from cell culture followed by the examination of RUNX-2 and 18S gene expression were tested by Real-Time Polymerase Chain Reaction (RT-PCR). Result: There was no difference in osteogenic differentiation capacity between DPSC and SHED

cleft lip and palate patients through RUNX-2 gene expression. Conclusion: The osteogenic differentiation capacity of SHED was equivalent to DPSC of cleft lip and palate patients.