

# Kemampuan diferensiasi osteogenik sel stromal pulpa gigi sulung dan gigi permanen pasien celah bibir dan palatum melalui ekspresi gen alkaline phosphatase (ALP) = Osteogenic differentiation capacity of stromal cell from human deciduous teeth and dental pulp stromal cells of cleft lip and palate patients through alkaline phosphatase (ALP) gene expression.

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## Abstrak

Latar Belakang: Celah bibir dan palatum adalah keadaan dimana terdapat gangguan fusi atau celah abnormal bawaan pada daerah bibir atas, alveolar, dan palatum serta dapat menimbulkan masalah pada penderita seperti gangguan estetika dan masalah saat berbicara. Perawatan rekonstruksi tulang dengan autologous bone graft merupakan baku emas pada perawatan pasien celah bibir dan palatum, tetapi perawatan ini memiliki kekurangan sehingga dikembangkan alternatif perawatan seperti teknik rekayasa jaringan. Sumber sel stromal mesenkim yang digunakan dapat berasal dari jaringan pulpa gigi seperti sel stromal pulpa gigi sulung dan sel stromal pulpa gigi permanen. Kemampuan diferensiasi osteogenik sel stromal pulpa gigi sulung dan permanen pasien celah bibir dan palatum merupakan salah satu pertimbangan untuk penggunaan sel autologous dalam perawatan teknik rekayasa jaringan, sedangkan kemampuan diferensiasi osteogenik dari sel stromal pulpa gigi pasien CLP belum diketahui.

Tujuan: Membandingkan kemampuan diferensiasi osteogenik sel stromal pulpa gigi sulung dan gigi permanen pasien celah bibir dan palatum melalui ekspresi gen ALP.

Metode: Sampel yang diisolasi dari jaringan pulpa gigi sulung dan gigi permanen pasien celah bibir dan palatum dikultur pada medium osteogenik, dilakukan ekstraksi RNA dan diuji dengan Real-Time Polymerase Chain Reaction (RT PCR) menggunakan primers alkaline phosphatase (ALP) dan 18s housekeeping gene.

Hasil: Ekspresi relatif gen ALP pada sel stromal pulpa gigi sulung pasien celah bibir dan palatum setelah dilakukan uji statistik tidak memiliki perbedaan bermakna bila dibandingkan dengan sel stromal pulpa gigi permanen pasien celah bibir dan palatum (nilai  $p = 0.156$ ).

Kesimpulan: Sel stromal pulpa gigi sulung dan gigi permanen memiliki kemampuan diferensiasi osteogenik karena dapat mengekspresikan marker osteogenik ALP.

.....Background: Cleft and lip palate is a condition where there is fusion disturbance or abnormal congenital cleft in the upper lip, alveolar, and palate area that can cause problems in patients such as aesthetic disorder and problem with talking. Autologous bone graft reconstruction treatment is the gold standard in treating cleft lip and palate patients, but this treatment has associated shortcomings so that alternative treatments such as tissue engineering techniques have been developed. The source of the mesenchymal stromal cells used can be derived from dental pulp tissue namely stem cells from human deciduous teeth and permanent dental pulp stromal cells. The osteogenic differentiation ability from dental pulp stromal cells of primary and permanent teeth in cleft lip and palate patients is one of the considerations for the use of autologous cells in the treatment of tissue engineering techniques, while the osteogenic differentiation ability of dental pulp stromal cells in cleft lip and palate patients has not been fully explored.

**Objective:** To compare the osteogenic differentiation capacity of primary and permanent dental pulp stromal cells in cleft lip and palate patients.

**Methods:** Samples isolated from primary and permanent dental pulp stromal cells in cleft lip and palate patients were cultured, RNA were extracted and tested by Real-Time Polymerase Chain Reaction (RT PCR) using alkaline phosphatase primers (ALP), and housekeeping gene in the form of 18s. **Results:** The relative expression of ALP in primary dental pulp stromal cells in cleft lip and palate patients was comparable to permanent dental pulp stromal cells in cleft lip and palate patients (p value = 0.156).

**Conclusion:** The primary and permanent dental pulp stromal cells have comparable ability to differentiate into osteogenic lineage and both cells tested can express the osteogenic gene of ALP.