

# Diferensiasi osteogenik sel stromal pulpa gigi permanen dan gigi sulung pada subjek celah bibir dan palatum melalui ekspresi gen collagen type I alpha I (COL1A1) = Osteogenic differentiation ability of dental pulp stem cells and stem cell from human deciduous teeth from cleft lip and palate subject through expression of collagen type I alpha I gene (COL1A1)

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## Abstrak

Latar Belakang: Subjek celah bibir dan palatum membutuhkan perawatan rekonstruksi tulang berbasis rekayasa jaringan dengan menggunakan sel stromal mesenkim. Sel stromal mesenkim merupakan sel yang banyak digunakan untuk regenerasi tulang karena mempunyai kemampuan proliferasi tinggi. Sel tersebut dapat berasal dari pulpa gigi sulung (SHED) dan pulpa gigi permanen (DPSCs) yang dapat berdiferensiasi menjadi osteoblas. Pada penelitian sebelumnya telah ditemukan beberapa karakteristik DPSCs dan SHED pada subjek celah bibir dan palatum, namun kemampuan diferensiasi dari sel stromal pulpa subjek celah bibir dan palatum belum diketahui. Tujuan: Mengevaluasi kemampuan diferensiasi osteogenik dari sel stromal pulpa gigi permanen dan sulung pada subjek celah bibir dan palatum melalui ekspresi gen Collagen Type I Alpha I (COL1A1). Metode : Sampel RNA yang diperoleh dari kultur RNA DPSCs dan SHED subjek celah bibir dan palatum, dengan Real-Time Polymerase Chain Reaction (RT-PCR) menggunakan primers Collagen Type I Alpha I (COL1A1), serta 18S sebagai housekeeping gene. Hasil : Tidak terdapat perbedaan ekspresi relatif gen COL1A1 antara sel stromal pulpa gigi permanen dan sel stromal pulpa gigi sulung pada subjek celah bibir dan palatum. Kesimpulan : SHED memiliki kemampuan diferensiasi osteogenik yang sama dengan DPSCs karena keduanya dapat mengekspresikan gen marker osteogenik COL1A1.

.....Background: Cleft lip and palate subject need bone reconstruction based tissue engineering treatment with mesenchymal stromal cells (MSC). One of the most mesenchymal stromal cells that can be used is derived from dental pulp tissues, such as primary tooth pulp or stem cells from human deciduous teeth (SHED) and dental pulp stem cells (DPSCs) which can differentiate into osteoblasts. In previous studies, several characteristics of DPSCs and SHED of the cleft lip and palate subjects have been found. However, osteogenic differentiation ability of dental pulp stromal cells from cleft lip and palate subject is unknown. Objective: To determine the osteogenic differentiation ability of DPSCs and SHED of cleft lip and palate subjects through the expression of the Collagen Type I Alpha I (COL1A1) gene.

Methods: RNA samples obtained from the culture of DPSCs and SHED of lip and palate cleft subjects, with Real-Time Polymerase Chain Reaction (RT-PCR) using primers Collagen Type I Alpha I (COL1A1) and 18S as a housekeeping gene.

Results: There was no difference in the relative expression of COL1A1 gene between DPSCs and SHED of CLP subjects.

Conclusion: SHED has the same osteogenic differentiation ability as DPSCs because they can express osteogenic marker genes COL1A1.