

Evaluasi Ekspresi Gen ALX4 sebagai Karakteristik Sel Stromal Pulpa Gigi Permanen dan Gigi Sulung Subjek Normal dan Pasien Celah Bibir dan Palatum = Evaluation of ALX4 Gene Expression as the Characteristics of Dental Pulp Stem Cells and Stem Cells from Human Exfoliated Deciduous Teeth in Normal Subjects and Cleft Lip and Palate

Tasya Sabila Bisyr, author

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Abstrak

Latar Belakang: Sumber sel stromal yang paling ideal digunakan dalam rekayasa jaringan adalah sel stromal pulpa gigi permanen (DPSC) dan sel stromal pulpa gigi sulung (SHED) dikarenakan sifat proliferasinya yang tinggi. Pada penelitian sebelumnya, dinyatakan bahwa terdapat peningkatan ekspresi gen homeobox salah satunya yaitu gen ALX4 sebagai pada pasien celah bibir dan palatum dengan subjek normal. Gen ALX4 adalah gen homeobox dibawah famili Alx dan memiliki peran langsung dalam perkembangan dan pembentukan kepala serta wajah serta mentranslasi protein yang meregulasi perkembangan dan proliferasi sel, pendewasaan dan diferensiasi sel, pergerakan sel, dan pertahanan sel. Namun, karakteristik DPSC dan SHED dilihat dari ekspresi gen ALX4 pada subjek normal dan pasien celah bibir dan palatum belum diketahui. Tujuan: Mengevaluasi karakteristik DPSC dan SHED subjek normal dan pasien CLP berdasarkan ekspresi gen ALX4. Metode: DPSC subjek normal, DPSC pasien celah bibir dan palatum, dan SHED pasien celah bibir dan palatum diperoleh dari bahan biologis tersimpan Laboratorium Oral Biologi Fakultas Kedokteran Gigi Universitas Indonesia. Selanjutnya ekspresi gen ALX4 dan housekeeping gene GAPDH diuji dengan two step quantitative RT-PCR (RT-PCR). Hasil: Tidak terdapat perbedaan ekspresi gen ALX4 baik diantara DPSC subjek normal dengan DPSC CLP ($p=0,407$) maupun DPSC CLP dengan SHED CLP ($p=0,145$). Kesimpulan: Tidak terdapat perbedaan karakteristik sel stromal pulpa gigi permanen dan sel stromal pulpa gigi sulung pada subjek normal dengan pasien celah bibir dan palatum berdasarkan ekspresi gen ALX4.

.....Background: The most ideal sources of stromal cells used in tissue engineering are dental pulp stem cells (DPSC) and stem cells from human exfoliated deciduous teeth (SHED) due to their high proliferative properties. In previous studies, it was stated that there was an increase in the expression of homeobox genes (differentially expressed genes (DEGs), one of which was the ALX4 gene as in cleft lip and palate patients with normal subjects. The ALX4 gene is a homeobox gene under the Alx family and has a direct role in the development and formation of the skull and human face, along with the ALX4 proteins that regulate cell development and proliferation, cell maturation and differentiation, cell movement, and cell defence. However, the characteristics of ALX4 gene expression in DPSC and SHED in normal and cleft lip and palate patients are not known. Objective: To evaluate and compare the characteristics of Dental Pulp Stromal Cells (DPSC) and Stromal Cells from Human Exfoliated deciduous teeth (SHED) in cleft lip and palate and normal subjects by the expression of the ALX4 homeobox gene. Methods: DPSC of normal subjects, DPSC of CLP patients, SHED of CLP patients were obtained from stored biological material in the Oral Biology Laboratory, Faculty of Dentistry, University of Indonesia. Then, the examination of ALX4 gene expression was tested by Real-Time Polymerase Chain Reaction (RT-PCR) Results: There was no

difference in ALX4 gene expression between DPSC in normal subjects and DPSC in cleft lip and palate subjects ($p=0,407$) and between DPSC in cleft lip and palate subjects and SHED in cleft lip and palate subjects ($p=0,145$). Conclusion: There were no differences in the characteristics of the pulp stromal cells of permanent and primary teeth in normal subjects with cleft lip and palate subjects through the expression of the ALX4 gene.