Identifikasi Karakteristik Sel Stromal Pulpa Gigi Sulung dan Permanen pada Subjek Normal dan Pasien Celah Bibir dan Palatum Melalui Ekspresi Gen CUX1 = Identification of Characteristics of Pulp Stromal Cells in Primary and Permanent Teeth in Normal Subjects and Cleft Lip and Palate Patients Through CUX1 Gene Expression

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Abstrak

Latar Belakang : Sel stromal yang dapat digunakan untuk regenerasi pada defek tulang diantaranya adalah Dental Pulp Stromal Cells (DPSC) dan Stromal Cells from Human Exfoliated deciduous teeth (SHED). Pada penelitian yang sudah ada, ditemukan bahwa terdapat differentially expressed genes (DEGs) pada beberapa gen homeobox salah satunya gen CUX1 yang mengalami penurunan ekspresi pada pasien celah bibir dan palatum dibandingkan subjek normal. Gen CUX1 atau Cut-like-homeobox 1 merupakan faktor transkripsi yang berperan dalam kontrol proliferasi dan diferensiasi. Validasi DEGs perlu dilakukan untuk memahami bagaimana gen diekspresikan dalam subjek yang sehat dan sakit serta dapat digunakan untuk memperoleh wawasan mengenai suatu penyakit. Oleh karena itu penelitian ini ditujukan untuk memvalidasi gen homeobox CUX1 sehingga dapat mengetahui karakteristiknya pada sel DPSC dan SHED pada pasien celah bibir dan palatum serta membandingkannya dengan DPSC subjek normal. Tujuan: Mengevaluasi karakteristik sel stromal gigi permanen (DPSC) dan sel stromal pulpa gigi sulung (SHED) pasien celah bibir dan palatum dan pasien normal melalui ekspresi gen homeobox CUX1. Metode: Sampel RNA DPSC subjek normal, DPSC CLP, SHED CLP diperoleh dari bahan biologis tersimpan Laboratorium Biologi Oral Fakultas Kedokteran Gigi Universitas Indonesia. Selanjutnya dilakukan uji ekspresi gen CUX1 dengan quantitative reverse-transcription PCR (RT-qPCR). Hasil : Tidak terdapat perbedaan ekspresi gen CUX1, baik antara DPSC subjek normal dengan DPSC CLP (p = 0,839) dan antara DPSC CLP dengan SHED CLP (p = 0,411). Kesimpulan: Tidak ada perbedaan karakteristik sel stromal pulpa gigi permanen dan gigi sulung pada subjek normal dengan subjek celah bibir dan palatum melalui ekspresi gen homeobox CUX1 sehingga dapat digunakan untuk perawatan rekayasa jaringan menggantikan autologous bone graft.
.....Background : Stromal cells that can be used to regenerate bone defects include Dental Pulp Stromal Cells (DPSC) and Stromal Cells from Human Exfoliated deciduous teeth (SHED). In existing studies, it was found that there are differentially expressed genes (DEGs) in several homeobox genes, one of which is the CUX1 gene, which has decreased expression in cleft lip and palate patients compared to normal subjects. The CUX1 or Cut-like-homeobox 1 gene is a transcription factor that plays a role in the control of proliferation and differentiation. It is necessary to validate DEGs to understand how genes are expressed in healthy and diseased subjects and can be used to gain insight into a disease. Therefore, this study aimed to validate the homeobox gene CUX1 to determine its characteristics on DPSC and SHED in cleft lip and palate patients and compare them with DPSC from normal subjects. Objective : To evaluate the characteristics of Dental Pulp Stromal Cells (DPSC) and Stromal Cells from Human Exfoliated deciduous teeth (SHED) in cleft lip and palate and normal subject through the expression of the CUX1 homeobox gene. Methods : RNA samples from normal subject’s DPSC, cleft lip and palate subject’s DPSC and cleft lip and palate subject’s SHED were obtained from stored biological material in the Oral Biology Laboratory,

Faculty of Dentistry, University of Indonesia. Then, the CUX1 gene expression test was performed using quantitative reverse-transcription PCR (RT-qPCR). Result : There was no difference in CUX1 gene expression, both between DPSC in normal subjects and DPSC in cleft lip and palate subjects ($p = 0.839$) and between DPSC in cleft lip and palate subjects and SHED in cleft lip and palate subjects ($p = 0.411$). Conclusion : There were no differences in the characteristics of the dental pulp stromal cells and Stromal Cells from Human Exfoliated deciduous teeth between normal subjects and cleft lip and palate subjects through the expression of the CUX1 homeobox gene so that it can be used for tissue engineering treatment to replace autologous bone graft.