The difference in expression of gene KLF4 in Adipose Derived Stem Cell (ADSC) and Umbilical Cord Stem Cell (USC) = Perbedaan ekspresi gen KLF4 di Adipose Derived Stem Cell (ADSC) dan Umbilical Cord Stem Cell (USC)

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Abstrak

ABSTRACT
Background: Recently, stem cells have gained popularity as a regenerative therapy for degenerative diseases which is prevalent in an aging population. Based on pluripotency, Embryonic Stem Cells (ESC) are very useful for replacement therapy. However, given ethical issues and immune barriers, the possibility of using other types of stem cells such as Adipose Derived Stem Cells (ADSC) and Umbilical Cord Stem Cells (USC) are being explored. Because the pluripotency of these two cells has not been thoroughly studied, this study aims to analyze the level of pluripotency of the two types of stem cells through the expression of the KLF4 gene, the co-regulator of the pluripotence network. Methods: RNA was extracted from ADSC and USC. One-step real-time RT-PCR was performed to find the relative expression of the KLF4 gene that describes the level of pluripotency of each stem cell. Results: Relatively, KLF4 was declared higher in ADSC compared to USC. Conculsion: ADSC has a higher level of pluripotency than USC while USC must have higher pluripotency. This could be due to the role of other genes involved in nucleus tissue pluripotency.
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ABSTRAK
Latar Belakang: Belakangan ini, terapi regeneratif menggunakan sel induk menjadi sebuah terapi populer terhadap penyakit degeneratif yang lazim terpapar pada populasi lanjut usia. Berdasarkan konsep pluripotency, Embryonic Stem Cells (ESC) sangat bermanfaat untuk terapi regeneratif ini. Namun, mengingat masalah etis dan autoimun, kemungkinan menggunakan jenis sel induk lainnya seperti Adipose Derived Stem Cells (ADSC) dan Umbilical Cord Stem Cells (USC) sedang dieksplorasi. Karena pluripotency dari kedua sel ini belum dipelajari secara menyeluruh, penelitian ini bertujuan untuk menganalisis tingkat pluripotency dari dua jenis sel induk melalui ekspresi gen KLF4, sebuah gen yang merupakan co-regulator jaringan pluripotency. Metode: RNA diekstraksi dari ADSC dan USC. One-step real-time RT-PCR dilakukan untuk mendapatkan ekspresi relatif gen KLF4 yang menggambarkan tingkat pluripotency sel induk tersebut. Hasil: Secara relatif, ekspresi KLF4 dinyatakan lebih tinggi di ADSC dibandingkan dengan USC. Konklusi: ADSC memiliki tingkat pluripotency yang lebih tinggi daripada USC sementara USC seharusnya memiliki pluripotency yang lebih tinggi. Ini bisa jadi karena peran gen lain yang terlibat dalam jaringan inti pluripotency.