Efek pemberian sekretom stem cells from human exfoliated deciduous teeth terhadap viabilitas, kepuncaan dan agresivitas sel punca kanker payudara aldh + melalui jalur pensinyalan tgf-b1 = Effect of secretomes from stem cell of human exfoliated decideous teeth on viability, stemness and aggresiveness of human breast cancer stem cell aldh through tgf-beta signaling

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Abstrak

Pertumbuhan kanker tidak hanya ditentukan oleh adanya sel kanker itu sendiri akan tetapi ditentukan juga oleh lingkungan mikro disekitarnya. Lingkungan mikro tersebut merupakan jaringan yang heterogen dengan adanya interaksi sel termasuk sel punca mesenkim. Sekretom mengandung faktor-faktor biologis terlarut yang dapat mempengaruhi pertumbuhan sel kanker. Stem cell from Human Exfoliated Deciduous SHED diketahui merupakan sumber sel punca yang memiliki banyak potensi. Sampai saat ini belum diketahui bagaimana dampak pemberian CM dari SHED terhadap sel punca kanker payudara. Oleh karena itu, penelitian ini bertujuan untuk menganalisis pemberian conditioned medium kultur SHED pada sel punca kanker payudara terhadap viablitas, proliferasi dan tumorigenitas serta kepuncaan dari sel punca kanker payudaraALDH dan sel punca kanker MCF7. Conditioned medium SHED SHED-CM adalah medium kultur bebas serum sel SHED yang dikumpulkan dalam 24 jam dan 48 jam. ALDH dan MCF7diberikan 50 v/v SHED-CM 24 jam dan 48 jam dan di inkubasi selama 72 jam. Hal yang sama dilakukan untukperlakuan aktivasi CM dengan suhu. CM sebelum digunakan terlebih dahulu dipanaskan dalam suhu 80 C selama 10 menit. Kontrol adalah sel yang diberikan 50 v/v a-MEM. Perhitungan viabilitas sel dilakukan dengan menggunakan metode Trypan Blue Exclusion Assay dan ekspresi relatif mRNA dari TGF-b1, TGF-b1 receptor TBRI, ALDH1A1 dan OCT4 menggunakan qRT-PCR dan analisis menggunakan perhitungan livak. Hasil penelitian menunjukkan bahwa ekspresi relatif dari TGF-b1, TGF-b1 reseptor TBRI, ALDH1A1 dan OCT4 pada sel ALDH dan MCF7 pasca induksi dengan CM SHED mengalami peningkatan yang signifikan dibandingkan dengan kontrol. Selain itu, peningkatan yang lebih signifikan ditunjukkan pada perlakuan aktivasi dibandingkan yang tidak diaktivasi. Hal yang berbeda pada hasil uji viabilitas sel. Viabilitas sel mengalami penurunan pasca induksi dengan CM SHED sedangkan setelah diinduksi dengan CM SHED yang telah diaktivasi, viabilitas sel mengalami peningkatan yang signifikan pada sel ALDH dan MCF7. Dengan demikian sekretom SHED dapat meningkatkan viabilitas dan proliferasi serta kemampuan kepuncaan dari ALDH dan MCF7.

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Cancer development is not only determined by corresponding of cancer cells but also by the microenvironment. This includes a heterogen network of interacting cell include mesenchymal stem cells. Conditioned medium of MSC culture containing soluble factor hes been identified to affect intercellular communicating between MSC and cancer cells which could affect the stemness of cancer cells. Many studies reported that Stem cells from human exfoliated deciduous teeth SHED as a novel stem cell source with multipotent potential. However, the effect of MSC interaction with cancer cells can not be clearly understood so that the effects of safety in its utilization are not yet known for certain. This study is to

confirm the relation between secretom of MSC from SHED with the stemness and agresiveness of ALDH and MCF7. SHED conditioned medium SHED CM, SHED were grown in serum free a MEM for 24 and 48 hours, consist of two groups, non heated and heated at 80 C for 10 min. Human BCSCs ALDH cultured in DMEM F12 were supplemented with 50 v v CM SHED 24 h and 48 h, as well as with heated by 72 h incubation. Control was BCSCs supplemented with 50 v v a MEM. We measured the viability with trypan blue assay and mRNA expression of TGF b1, TGF b1 receptor TBRI, as well as stemness genes ALDH1A1 and OCT4 using qRT PCR. The relative mRNA expression levels of TGF b1, T RI, OCT4 and ALDH1A1 in BCSCs supplemented with non heated SHED CM were increased compared to their control and also after TGF b1 heat activation was significantly higher than in non heated SHED CM. In the other hand, the viability cell was significantly reduced after supplemented with non heated SHED CM, but increased higher than control when treated with heated SHED CM, there are may be a role of the TGF b1 signaling involvement of other factors in SHED CM affect cell proliferation and increase the stemness. We found that secretomes SHED can increase proliferation of breast cancer stem cells ALDH and also expression of stemness gene OCT4 and ALDH1A1. the activation with heated can enhance the increase of proliferation and stemness. We assumed that signalling of TGF can affect tumor proggresion of ALDH and MCF7