

СОБЛЮДЕНИЕ ЭТИЧЕСКИХ СТАНДАРТОВ

В работе не было экспериментов с участием животных и людей.

КОНФЛИКТ ИНТЕРЕСОВ

Авторы заявляют об отсутствии конфликта интересов.

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Metalloproteinase's Activity of Two Placenta-Derived Stem Cells Lines from a Donor Differing in the Adipogenic Differentiation Potential and Nature of Replicative Senescence

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A long-term cultivation of 2 lines of human MSCs isolated from different sites of placenta was carried out. The MSC-PL-1 cell line is characterized by premature replicative senescence (RS) compared to the MSC-PL-2 line. During the induction of adipogenic differentiation (AD), it was shown that AD does not occur at early and late passages in cells of MSC-PL-1 line unlike cells of the MSC-PL-2 line. Comparative analysis of the activities of matrix metalloproteinases (MMP-1, -2 and -9) in the process of RS of these cell lines indicates interlinear differences. So, during RS in MSC-PL-2 cells the activity of MMP-2 and -1 decreases, and MMP-9 does not change, and in MSC-PL-1 cells with premature RS the activity of MMP-9 and -1 increases, while activity of MMP-2 decreases. The analysis of MMP -1 and -2 activities during the process of adipogenic differentiation in the MSC-PL-2 line at the early 6th passage showed a number of differences between the activity levels of these MMPs during 21 days, but they all showed the same wave-like manner of changes. The activity of MMP-9 had a different character of changes during the 21 days of differentiation. The same pattern of changes took place at the late 16th passage in same 3 MMP during 21 days of differentiation. Since there is no adipogenic differentiation in the MSC-PL-1 line, we analyzed the activities of MMP -1, -2 and -9 during cultivation in induction medium for 21 days in the early 6th and late 13th passages. There were changes in the activity of all MMPs in both variants, but they were not synchronous. In general, there was a significant decrease in the activity of all 3 MMP on the 13th passage compared to the 6th passage. The obtained results indicate the participation of MMPs in a wide range of cellular processes.

Keywords: human mesenchymal stem cells, replicative senescence, adipogenic differentiation, matrix metalloproteinases