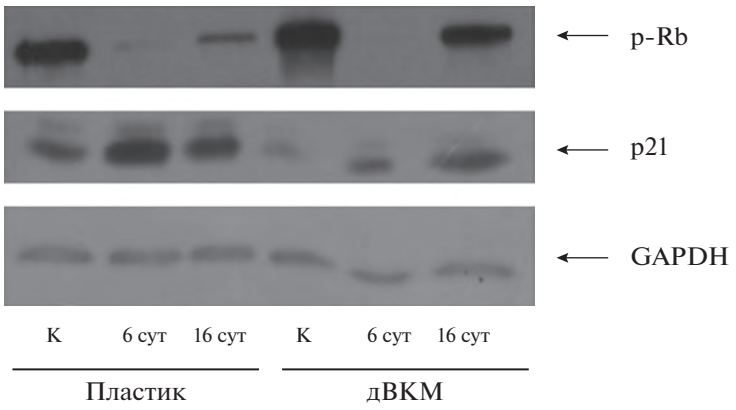

Рис. 4. Долгосрочное (6 и 16 сут) культивирование эМСК, обработанных H_2O_2, на дВКМ изменяет функциональный статус белка Rb. Вестерн-блот-анализ с использованием специфических антител. К – контрольные интактные клетки. Указаны фосфорилированная форма Rb (p-Rb), а также белки p21 и GAPDH (использован в качестве контроля нагрузки).

клинического применения МСК в регенеративной медицине.

ЗАКЛЮЧЕНИЕ

В настоящей работе мы продемонстрировали, что долгосрочное культивирование эМСК, в которых запущена программа старения, на дВКМ от молодых MSCWJ-1 приводит к понижению генерации АФК и интенсивности автофлуоресценции, уменьшению размера клеток и активности SA-β-Gal, а также изменению функционального статуса Rb по сравнению с теми же маркерами клеточного старения на пластике. В совокупности, эти результаты дают основание полагать, что данный ВКМ способен частично обращать (тормозить) преждевременное старение эМСК в ответ на окислительный стресс, а также расширяют представление о ВКМ как регуляторе функциональной активности клеток.

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В экспериментах животные и люди не участвовали.

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Decellularized Extracellular Matrix Retards Premature Senescence of Human Endometrial Mesenchymal Stromal Cells

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The extracellular matrix (ECM), the main component of the extracellular space, mediates signaling between cells and controls the key cell functions—proliferation, differentiation, and migration. The relevance of studying ECM is due to a wide range of its biological properties that can be applied in regenerative medicine and bioengineering. Cell-derived decellularized ECM (dECM) is used to study ECM as a regulator of the cell functional activity, as well as to mimic their tissue-specific microenvironment. Here, we hypothesized that dECM deposited by Wharton's jelly-derived MSCs modulates the senescence phenotype of endometrial MSCs (eMSCs) acquired in response to oxidative stress. This aspect of ECM functioning in the context of eMSCs has so far remained unexplored. A comparative study of prolonged H_2O_2-induced senescence of eMSCs exposed to both dECM and cultured plastic showed that dECM may effectively downregulate the main senescence markers. Our findings suggest that ECM is able to partially reverse (retard) the eMSCs premature senescence.

Keywords: extracellular matrix, decellularization, human endometrial mesenchymal stromal cells, senescence phenotype, oxidative stress, premature senescence