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A self-assembly peptide nanofiber scaffold containing laminin motif induces cellular survival, proliferation, migration, attachment, and neuronal differentiation: An *in vitro* study

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Tissue engineering has created significant approaches toward the purposes of regeneration of damaged tissues. A general approach to construct artificial tissues needs artificial extracellular matrices (ECMs) with functions similar to the native ECMs. Considerable attempt has been made to combine biologically active molecules into the self-assembling peptide in order to improve cells growth, survival, and differentiation. In this study, RADA4GGSIKVAV (R-GSIK) was designed as a three-dimensional (3D) nano-fiber scaffold. The cell adhesion, viability, proliferation, migration, and differentiation of rat embryonic neural stem cells (NSCs) were investigated. The characterization of the R-GSIK shows an open porous structure and a suitable surface area available for cell interaction. R-GSIK promoted in terms of the cell adhesion, viability, proliferation, and migration. Additionally, the R-GSIK could enhance NSCs to differentiate into neuron cells. Moreover, the NSCs injected within R-GSIK had a lower glial differentiation rate than in the puramatrix. Based on our results, it might be concluded that R-GSIK holds great promise for central nervous tissue repair.

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