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Poster Presentation

Application of 3D Bioactive Scaffolds in Brain Injury

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Abstract

Naturally the brain is ineffective in regenerating functional tissue after disease or injury ,so to overcome these defects innovative curative strategies such as stem cell transplantation and tissue engineering have to be considered. Researchers investigate the use of strategies to attain better functional repair results. One of the important challenges of effective transplantation is the delivery of cells to the injured site whereas maintaining cell viability. Intravenous or intraparenchymal injections as Classical methods for cell delivery are plagued by low engraftment of transplanted stem cells. Innovative implantable devices such as 3D bioactive scaffolds can supply the metabolic and physical support required for successful stem cells engraftment, maturation and proliferation. Also the successes of cell replacement therapies can be strengthen by providing a microenvironment by bioactive scaffolds that facilitates the survival, proliferation, differentiation of transplanted cells. Transferring bioactivity into scaffolds is vital to enabling cell to matrix and cell to cell interactions. This has been achieved through the attachment of biomolecules for example extra cellular matrix proteins and trophic factors to direct cell development and proliferation. On the other hand some researchers examine biocompatible polymers as patterns for controlled release of bioactive molecules within the central nervous system for constant drug delivery.

Keywords: Stem cells, Scaffolds, Brain, Injury.

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