

Review Article

Preparation of decellularized three dimensional scaffolds as the model for tissue engineering and their functional assessments in vitro application of blastema tissue

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Abstract

Tissue engineering is based on three main factors including scaffolds, cells and growth factors. Natural scaffolds derived from decellularized tissues and organs have been successfully used in tissue engineering. Decellularization studies have shown that natural scaffolds which maintain their main structure and properties could be a suitable tool for studying cellular behaviors and preparation of such scaffolds is an important part of future research in biology that may have extensive applications in regenerative medicine and tissue engineering. Blastema tissue which is produced after injuries in some organisms has embryonic cell characteristics, and can be a suitable model for evaluation of cell behaviors in various tissues. In this review, the process of decellularization, process involved in preparation of 3D scaffolds derived from extracellular matrix of various tissues including cartilage, bone, gingiva, aorta and bladder, and assessment of their interactions with blastema tissue under in vitro conditions are discussed.

Keywords: 3D natural scaffolds, Tissue engineering, Decellularization, Blastema tissue, Regenerative medicine

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