

Cardiac tissue engineering

Samridhi Rana

Currently, cardiovascular diseases (CVD) are one of the most common causes of death worldwide. CVD may occur due to different types of conditions, such as atherosclerosis, aneurysm and inflammation that can cause damage to the heart and blood vessels. Unlike other cells, the heart cells known as myocytes are unable to regenerate after injury. In view of this issue, advanced technology like tissue engineering has been developed. Tissue engineering has been proven to be useful in the treatment of several types of CVD through heart transplantation and cardiac tissue regeneration. In cardiac tissue engineering, cells are isolated from the patient through biopsy and then grown on a 3D matrix using biomaterials such as scaffolds made of polyglycolic acid (PGA), fibrin or collagen that act as a template and provide a well organised structure to the growing cells. During heart attacks, the heart does not get the full supply of oxygen, leading to scarring of the heart tissue which becomes non-functional. Removal of the scarred tissue and restoring of heart function is a challenging procedure; however, the advancement of cardiac tissue engineering has facilitated this treatment method. Therefore, cardiac tissue engineering is a novel and effective technique for the treatment of CVD.

Keywords: Tissue engineering, Cardiovascular disease, Scaffolds, Biomaterials, Myocytes

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