Surface modification with catecholamine to enhance cell attachment on poly(e-caprolactone) microparticle

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Polymeric scaffolds have been used as drug or gene vectors in tissue engineering. Ideally, these scaffolds are biocompatible and bioresorbable that are consistent with the rate of tissue growth and have analogous mechanical properties with surrounding tissue area of the implantation. These polymer scaffolds, however, have low efficiency and cytotoxicity when they are used for gene therapy as non-viral vector. In this study, we used poly(e-caprolactone) microparticle as 3-Dimensional scaffold, adhesive materials for surface modification, and cell attachment for gene delivery. Adeno-associated virus (AAV), known as non-pathogenic, safe, and efficient in human neural therapy, is employed as gene vector. The surface of biodegradable particle is modified with adhesive materials to increase the cell adhesion. In conclusion, we have achieved the promotion of cell attachment on the surface of modified particles. This system can be employed with virus and gene delivery and in the future it will be applied to treat of incurable disease like ischemic brain injury.