

Stimulation of rat's sciatic nerve post-traumatic regeneration using plasmids expressing vascular endothelial growth factor and basic fibroblast growth factor

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Abstract

The development of effective treatments for patients with peripheral nerve injury is an urgent task of biomedicine. «Gold» standard in restoring the integrity of nerve conduits is auto-nerve transplantation in which a peripheral nerve defect is corrected with autologous nerve graft. Here we propose a method for stimulating revascularization and regeneration of auto-nerve graft by a local injection of plasmid pBud-VEGFFGF2, expressing vascular endothelial growth factor (VEGF) and basic fibroblast growth factor (FGF2). It is shown that direct injection of plasmid pBud-VEG-FGF2 in the proximal and distal segments of nerve, as well as in the auto-nerve graft, stimulates the regeneration of the rat's sciatic nerve and restores motor activity.

Keywords

Auto-nerve graft, Autologous transplantation, Basic fibroblast growth factor (FGF2), Gene therapy, Peripheral nerve, Plasmid, Vascular endothelial growth factor (VEGF)