

Coacervate 코팅된 PLGA 매쉬를 이용한 성장인자 전달을 통한 쥐 피부 조직에서의 혈관생성 활성화(Dual Delivery of Growth Factors with Coacervate-Coated Poly(Lactic-co-Glycolic Acid) Mesh Improves Neovascularization in a Mouse Skin Flap Model)

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In order to improve neovascularization in skin flaps, we developed an exogenous growth factor (GF) delivery platform comprised of coacervate-coated PLGA nanofibers, using a coacervate that is a self-assembled complex of poly(ethylene arginanyl aspartate diglyceride) polycation, heparin, and cargo GFs (i.e., VEGF and/or TGF- β 3). The coacervate was coated onto a nanofibrous PLGA membrane for co-administration of dual GFs. An in vivo study using a mouse skin flap model demonstrated that implantation of Coa-Dual NF reduced necrosis and enhanced blood perfusion in skin flap areas after 10 days, as compared to any single GF-loaded coacervate/PLGA fiber along with direct administration of the other GF onto the defect site. Moreover, Coa-Dual NFs exhibited a well-composed skin appendage and a significantly higher number of blood vessels. Therefore, it is concluded that Coa-Dual NFs may lead a synergetic effect of dual GFs for reducing necrosis in the random skin flaps.