202a Ehd Monomer Effect on Myoblastic Cell Attachment and Proliferation

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Incisional hernias are a common clinical problem occurring in up to ten percent of all patients undergoing abdominal incisions. Current repair techniques involve the placement of a prosthetic biomaterial, xenografts, or allografts. Despite these techniques, the incidence of hernia recurrence is in excess of ten percent. A functional biomaterial scaffold will incorporate myoblastic cells for skeletal muscle regeneration. The development of this biomaterial scaffold will be advantageous in hernia repair strategies. The biomaterial polymer we investigated was 5-ethyl-5-(hydroxymethyl)-β,β-dimethyl-1,3-dioxane-2-ethanol diacrylate (EHD). To create the scaffold, EHD was cross linked into a solid network. Since EHD lacks carboxyl groups, the byproducts produced when it is degraded are not acidic. This prevents additional degradation of the scaffold due to high acidity and decreases the inflammatory response of skeletal muscle tissue surrounding the implant. With such desirable degradation qualities, adding a cellular component to this scaffold would give us a functional biomaterial for abdominal wall hernia repair. To test our EHD network, we studied the effects of myoblastic cell attachment and proliferation on our EHD scaffold. EHD was initially dissolved in acetone. Then benzoyl peroxide was added to initiate cross linking to form the EHD network. Skeletal muscle was harvested from the leg of rats and digested in a collagenase/dispase/trypsin solution overnight. The myoblastic cells were filtered with a 70μm nylon mesh. The cells were pre-cultured in F-10 Ham media containing 10% fetal bovine serum and 1% penicillin/streptomycin. After the pre-culture, the cells were seeded onto the EHD network. Myoblastic cell attachment and viability were determined. Results indicate the effects of the monomer EHD on myoblastic cell attachment and proliferation.