

Development of Polyaniline-Polyisocyanide hydrogel for *in vitro* skeletal muscle tissue model

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Abstract

Development of a reliable *in vitro* culture system to test different drugs is one of the important steps in a drug discovery process. Conventionally, 2D culture often used for screening drugs but 3 D culture got more attention as it can mimic the *in vivo* conditions. In this study, the polyaniline-polyisocyanide hydrogel will be synthesized with a suitable mechanical property related to C2C12 cells. The biocompatibility of the hydrogel will be checked. The cells will be differentiated into myotubes and the contractile properties of the cells will be determined. The model later can be used for drug testing.

Methodology

- 1) Synthesis of polyaniline-polyisocyanide hydrogel
- 2) Physical characterization: Rheology, Porosity
- 3) Optimization of suitable concentration of polymer for cell culture: biocompatibility, Live dead assay, muscle differentiation.
- 4) Contractile force generation in the developed muscle tissue in presence of electric field.

Technique used

- 1) Preliminary knowledge for synthesis
- 2) Rheology
- 3) Confocal microscopy
- 4) Immunostaining