



Official Journal of TESMA

Regenerative Research

www.regres.tesma.org.my
E-ISSN 2232-0822

Tissue Engineering
and Regenerative
Medicine Society of
Malaysia

Regenerative Research 7(1) 2018 144

CHANGES OF MYOBLAST MORPHOLOGY IN RESPONSE TO EXTRACELLULAR STIMULATION

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ARTICLE INFO

Published: 26th August 2018

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Keywords:

Migration, morphology,
cell-substrate interaction,
myoblast, laminin,

SUMMARY

Changes in cell morphology during migration is a foundation of many biological processes such as embryonic development and wound healing. Cell shows dynamic changes in cell morphology during migration in response to external signals such as physical signals, chemical signals, and mechanical signals. Regulation of intracellular pathway and physical cell-substrate interaction depends on control of cell shape during migration. It is essential to understand how external stimulus may affect the cell structure and behaviour during migration at different stages. In this study, we determine the morphological changes of myoblast on laminin-coated surface by using live imaging tools and immunocytochemistry. Myoblasts on laminin-coated surface showed small cell body immediately after attachment, but subsequently enlarged due to cell spreading and demonstrate migration as early as 30 minutes. During this phase, the actin filaments predominantly distributed across the cell body with the presence of filopodia. In contrast, myoblast on plastic surface without laminin showed rounded morphology and required longer time for cell spreading. Eventually, myoblast displayed spindle-shaped phenotype on both surfaces, however, total cell area of myoblasts was significantly higher on laminin coated surface. In an effort to investigate the involvement of ROCK signalling in myoblast migration and morphology, an inhibitor namely Y-27632 was used for cells on both surfaces. It was shown that the myoblasts on laminin-coated surface exhibited long narrow morphology after exposed to the inhibitor. In conclusion, myoblast showed dynamic cell morphology during migration in response to external stimuli at different phase of cell growth.

Acknowledgement

This study was funded by GUP-2013-002