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Presentation Abstract

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Presentation Title:	Effects of extra-cellular matrix proteins on neurite extension in isolated neuronal cultures of dorsal root ganglia
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Topic:	++A.08.b. Regeneration: PNS
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Abstract:	Extracellular matrix provides structural support to the cells and widely used in preparation of neuronal cultures to promote attachment of the neurons and neurite extension. To study their roles in mature peripheral nervous system regeneration, the effects of laminin, fibronectin, collagen type 1 and 4 on neurite extension were investigated in isolated dorsal root ganglia neuronal cultures. Dorsal root ganglia were removed from Balb/C mice sacrificed under ketamin anesthesia and isolated neuronal cultures were prepared using routine methods. Neuronal cultures were visualized at 24th and 48th hours using time lapse microscopy. The number of neurons that extend neurites and the number and length of neurites were measured in ImageJ program. Laminin, fibronectin and collagen 4 significantly increased the number of neurons extending neurites at 24th hour (66%, 56% and 52%, respectively vs. 45% control) while the effects of only laminin and fibronectin were significant at 48th hour (85% and 76%, respectively vs. 70% control). Laminin and collagen 4 significantly increased the neurite number each neuron extended at 48th hour (6.5 and 6.0, respectively vs. 5.7 control). Laminin and fibronectin increased the total length of neuritis extended by each neuron both at 24th (136.0 µm and 88.6 µm, respectively vs. 61.2 µm control) and 48th hours (362.9 µm and 218.1 µm, respectively vs. 118.9 µm control) while collagen type 1 and 4 had significant effects only at 48th hour (147.1 µm and173.4 µm, respectively). The findings compares the effectiveness of the extracellular matrix proteins in promoting neurite growth in cultures and suggest that laminin and fibronectin promotes neurite extension more effectively than collagen type 1 and 2 in isolated neuronal culture of dorsal root ganglia. Laminin and fibronectin could

be better candidates to encourage axonal elongation in the studies of neuroregeneration.

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Keyword (s): DORSAL ROOT GANGLION

EXTRACELLULAR MATRIX

AXON