conferenceseries.com SciTechnol
15th International Congress on
VISION SCIENCE AND EYE
August 10-11, 2017 | London, UK

HaiSheng Zhao, Int J Ophthalmic Pathol 2017, 6:4
DOI: 10.4172/2324-8599-C1-002

Expression of Thy1 in rat retinal ganglion cell cultures is regulated by LEDGFp52

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Aim: Aim of this study is to investigate LEDGFp52 regulation of primary neurite number and length, mRNA production and protein expression of Thy1 of rat retinal ganglion cells.

Methodology & Theoretical Orientation: Primary RGCs were isolated and cultured. After 36 h in culture, LEDGFp52(2.0×10^{-4} g/L) and Ab-LEDGF(2.5×10^{-4} g/L) were added into cultures of RGCs; pAd-LEDGFp52 (2.5×10^{-4} g/L) and siRNA-LEDGFp52 (6.0×10^{-4} g/L) were transfected into RGCs. After 12, 24, 36, 48, 72 and 96 h, in culture changes in neurite number and length were investigated using contrast phase microscopy, and an IPP image analysis. The Thy1 mRNA production and proteins expression were assayed after 24, 48, 72 and 96 h in culture using RT-PCR and immunofluorescence, respectively.

Findings: The primary neurite numbers on single RGCs in the +LEDGF treatment groups were not significantly different, but the neurite length was much longer and Thy1 mRNA production and proteins expression were much more than the control group, meanwhile, the number and length of primary neurites on single RGCs in the Ab-LEDGF group were significantly less than the control group at 72 and 96 h, and Thy1 mRNA production were much less than the controls at all the time points, however, its proteins expression was just less than controls at 24 h. After transfecting with pAd-LEDGFp52, the number of neurites were significantly increased at 72 and 96 h, their lengths were significantly increased at all the time points but 24 h compared to control group, moreover, Thy1 mRNA production and proteins expression were much more than the control group at all the time points. However, the introduction of siRNA-LEDGFp52 significantly decreased the number at all the time points but 24 h and the length of neurites was shorter compared to the controls. Similarly, Thy1 mRNA productions were significantly down-regulated at all the time points and proteins expressions were significantly down-regulated at all the time points but 96 h.

Conclusion & Significance: RGC neurite growth and Thy1 expression can be controlled by the LEDGFp52. The LEDGFp52 may be beneficial to RGCs in vitro, and Thy1 levels are closely related to RGCs growth.

Biography

Haisheng Zhao has his expertise in “Optic nerve injury and regeneration, neuroprotection on retinal ganglion cells”. He has published six peer-reviewed journal articles. His research interests include Maculopathy and age-related macular degeneration. Based on 15 years of research accumulation, he has given 13 international seminar and conference presentations.

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