

Predegenerated Schwann cells-a novel prospect for cell therapy for glaucoma: neuroprotection, neuroregeneration and neuroplasticity

Smedowski A (1,2,3) , Liu X (4) , Pietrucha-Dutczak M (1) , Matuszek I (1) , Varjosalo M (4) , Lewin-Kowalik J (1)

1 Chair and Department of Physiology, School of Medicine in Katowice, Medical University of Silesia, Medykow 18, 40-752 Katowice, Poland.

2 Department of Ophthalmology, University of Eastern Finland, P.O. Box 1627, 70211 Kuopio, Finland.

3 Department of Ophthalmology, School of Medicine with the Division of Dentistry in Zabrze, Medical University of Silesia, Panewnicka 65, 40-760 Katowice, Poland.

4 Institute of Biotechnology, P.O. Box 65, University of Helsinki, 00014 Helsinki, Finland.

Glaucoma is an optic neuropathy that leads to irreversible blindness. Because the current therapies are not sufficient to protect against glaucoma-induced visual impairment, new treatment approaches are necessary to prevent disease progression. Cell transplantation techniques are currently considered to be among the most promising opportunities for nervous system damage treatment. The beneficial effects of undifferentiated cells have been investigated in experimental models of glaucoma, however experiments were accompanied by various barriers, which would make putative treatment difficult or even impossible to apply in a clinical setting.

The novel therapy proposed in our study creates conditions to eliminate some of the identified barriers described for precursor cells transplantation and allows us to observe direct neuroprotective and pro-regenerative effects in ongoing optic neuropathy without additional modifications to the transplanted cells. We demonstrated that the proposed novel Schwann cell therapy might be promising, effective and easy to apply, and is safer than the alternative cell therapies for the treatment of glaucoma.

Sci Rep. 2016 Apr 1;6:23187. doi: 10.1038/srep23187.

PMID: 27034151

<http://www.ncbi.nlm.nih.gov/pubmed/27034151>