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Title: Fibrillogenesis of ECM proeins to the innerwall of SC might have correlation with the aqueous humor outflow resistance

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Glaucoma is a progressive optic neuropathy called 'silent thief of sight' which is generally associated with elevated intraocular pressure (IOP) and therefore, an increased IOP has been considered to be a major risk factor for glaucomatous nerve damage. IOP is the result of the balance between the rate of aqueous humor formation and outflow. The contribution of transcellular, pore formations or paracellular pathways to fluid flow across the inner wall of SC is not certain. However under normal physiological conditions, the major resistance to outflow is due to the conventional outflow pathway consisting of the trabecular meshwork (TM) and Schlemm's canal (SC).

The potential role of extracelluar matrix (ECM) changes or cell-cell attachments of the outflow pathway cells in outflow resistance has not been clarified. However, the soluble form of ECM proteins such as fibronectin has been shown to be secreted by outflow pathway cells. Several studies have shown that Rho-GTPase activation promotes clustering of integrins or conformational changes induce the process of fibrillogenesis on the cell surface with ECM proteins. Interestingly, we have shown that Rho-GTPase activating agents such as LPA and thrombin caused a significant decrease in outflow facility in porcine eyes and decreased permeability of SC cell monolayers. Further, immunostaining of serum starved SC cell monolayers in vitro, treated with LPA and exogenous fibronectin exhibited enormous fibrils formation of fibronectin as compared to the controls. Of significance, we suggest that in addition to the Rho-GTPase activation of SC cell monolayers, the phenomena of fibrillogenesis might also be contributing to the decreased outflow facility in porcine eyes

Biography

Janardan Kumar, Ph.D., a professor of microbiology at Becker College in the United States, who strongly believes in his patents with a series of molecules that could be a blockbuster to cure glaucoma and/or epiretinal detachment. In the United States he received post-doctoral training in glaucoma at Duke Eye Center, North Carolina, a natonally renowned eye research laboratory, under supervision of Dr. David L. Epstein. The unpublished data of Dr. Kumar's approach to ex-vivo perfusion studies or in live rabbits performed by physisians were highly appreciated. He is very innovative and published several other fine works including his original work as first authored article in SCIENCE.

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