

<http://www.ncbi.nlm.nih.gov/pubmed/20359511>

[J Control Release](#). 2010 Jul 14;145(2):76-90. Epub 2010 Mar 29.

# Silver nano - a trove for retinal therapies.

[Kalishwaralal K](#), [Barathmanikanth S](#), [Pandian SR](#), [Deepak V](#), [Gurunathan S](#).

## Source

Department of Biotechnology, Division of Molecular and Cellular Biology, Kalasalingam University, Anand Nagar, Krishnankoil-626190, Tamil Nadu, India.

## Abstract

Pathological retinal angiogenesis (neovascularization) is one of the most feared complications among retinal diseases, leading to visual impairment and irreversible blindness. Recent findings made by us on therapeutic applications of biologically synthesized silver nanoparticles (AgNPs) against VEGF induced retinal endothelial cells, elucidates the effectual inhibitory activities of AgNPs over the downstream signaling pathways (Src and AKT/PI3K) leading to retinal angiogenesis. The current review focuses on the imperative role of VEGF induced angiogenesis in the development of retinal neovascularization and despite the fact that several VEGF targeting ocular drugs are available; the review examines the need for a cost economic alternative, thereby suggesting the role of AgNPs as an emerging economic ocular drug for retinal therapies. The current technologies available for the development of targeted and controlled release of drugs is being discussed and a model has been proposed for the amenable targeting mechanism, by which Poly gamma glutamic acid (PGA) capsulated AgNPs conjugated to cyclic RGD peptides carry out a sustained controlled release specifically targeting the neovascularization cells and induce apoptosis unaffacting the normal retinal cells. These constructs consequently affirm the futuristic application of silver nanoparticles as a boon to ocular therapies.

Copyright (c) 2010 Elsevier B.V. All rights reserved.

PMID:

20359511

[PubMed - indexed for MEDLINE]

<http://pubget.com/paper/20359511>



# Silver nano — A trove for retinal therapies

[Kalimuthu Kalishwaralal](#), [Selvaraj BarathManiKanth](#), [Sureshbabu Ram Kumar Pandian](#), [Venkatraman Deepak](#) and [Sangiliyandi Gurunathan](#) [J Control Release](#) **145(2):76-90** (2010) [PMID](#) 20359511

Pathological retinal angiogenesis (neovascularization) is one of the most feared complications among retinal diseases, leading to visual impairment and irreversible blindness. Recent findings made by us on therapeutic applications of biologically synthesized silver nanoparticles (AgNPs) against VEGF induced retinal endothelial cells, elucidates the effectual inhibitory activities of AgNPs over the downstream signaling pathways (Src and AKT/PI3K) leading to retinal angiogenesis. The current review focuses on the imperative role of VEGF induced angiogenesis in the development of retinal neovascularization and despite the fact that several VEGF targeting ocular drugs are available; the review examines the need for a cost economic alternative, thereby suggesting the role of AgNPs as an emerging economic ocular drug for retinal therapies. The current technologies available for the development of targeted and controlled release of drugs is being discussed and a model has been proposed for the amenable targeting mechanism, by which Poly gamma glutamic acid (PGA) capsulated AgNPs conjugated to cyclic RGD peptides carry out a sustained controlled release specifically targeting the neovascularization cells and induce apoptosis unaffected the normal retinal cells. These constructs consequently affirm the futuristic application of silver nanoparticles as a boon to ocular therapies.

DOI: 10.1016/j.jconrel.2010.03.022

Version: za2963e q8za6 q8zbd q8zc9 q8zdd q8zef q8zfl q8zga