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Thermosensitive in situ forming gel containing bevacizumab loaded nanoparticles for choroidal neovascularization treatment

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Choroidal Neo-Vascularization (CNV) is considered as the leading cause of vision loss in different posterior segment ocular diseases such as proliferative diabetic retinopathy, retinal vein occlusions, retinopathy of prematurity and Age-related Macular Degeneration (AMD). Today, the most effective treatments of CNV are the ones applied through injections; however, short half-life and fast clearance of drugs, e.g. bevacizumab, in vitreous leading to the need for multiple injections that is the main drawback of these treatments. To address this problem administration of controlled drug delivery systems such as particulate carriers have been suggested. Moreover, the thermosensitive in situ forming gels are good candidates for sustaining the drug release and can improve the drug- releasing features of nanoparticles. Following to our previous studies, here a novel nano drug delivery system was formulated. Accordingly, bevacizumab loaded polymeric nanoparticles with the mean particle size of 185 nm were prepared and embedded in the thermosensitive three-block copolymer and the *in vitro* characteristics was evaluated. During the *in vivo* investigations a single dose of formulation was intravitreally injected to rabbits. The vitreous concentration of the drug was assayed in different time intervals using ELISA method and intraocular pharmacokinetic parameters were determined. The results revealed around 4 times higher mean residence time of bevacizumab in rabbit treated by our formulation in comparison to the controls which indicated the promising potentials of designed formulation as a novel ocular drug delivery system.

Biography

Reyhaneh is an assistant professor in Department of Pharmaceutics and Pharmaceutical Nanotechnology and a highly motivated researcher in the field of nanomedicine and biomaterials with a 7-year experience of working in Research and Development (R&D) of pharmaceutical industries. Her postdoctoral research was focused on preparation and *in vivo* evaluation of novel drug delivery system intended for Age-related Macular Degeneration (AMD) treatment and she has an 8-year background of teaching as a lecturer.

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