

Traditional Chinese medicine compound eye ophthalmic preparation of slow-release preparation, and prevention and treatment of eye diseases of vascular disease

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The extent of absorption of an ophthalmic drug is severely limited by physiological constraints. The conventional liquid ocular formulation is eliminated from the precorneal area immediately upon instillation because of lachrymation and effective nasolacrimal drainage. Moreover, systemic absorption of the drug drained through the nasolacrimal duct may result in some undesirable side effects. Various preparations, such as ointments, suspensions, inserts, have been developed for ophthalmic delivery system not only to slow down the drug elimination but also to lengthen the residence time of vehicle on ocular surface. However, they have not been used extensively because of some drawbacks, such as blurred vision with ointments or low patient compliance with inserts. An ideal ophthalmic formulation should be administered in eye drop form, without causing blurred vision or irritation. This problem can be overcome using in situ gel-forming drug delivery systems prepared from polymers that exhibit sol-to-gel phase transitions due to a change in a specific physicochemical parameter in the cul-de-sac. These in situ gel-forming systems could prolong the precorneal residence time of a drug and improve ocular bioavailability. An ophthalmic delivery system with high clarity and mucoadhesive properties and improved retention time was developed with Hydroxypropyl methylcellulose. Ophthalmic gel was overall studies in these aspects, including extraction, formulation, the release characteristics in vitro, quality standard and irritability. Four main sections were included in this paper.

The membraneless model was used to investigate the behavior of gel erosion and drug release. Correlation analysis demonstrated that drug release and gel erosion was followed the Ritger-Peppas kinetics. The cumulative release of drug was well correlated with cumulative quantities of gel erosion and drug release in vitro was mainly controlled by gel erosion. There was no apparent irritancy to rabbit eyes has been observed, and this preparation was complied with the law of ophthalmic preparation.

The developed delivery system seems to be a promising tool for treatment of eye diseases of vascular disease (diabetic retinopathy, DR; retinal vein occlusion, RVO; retinal artery occlusion, RAO, etc.), as it is easily administered and shows an improved adhesion and prolonged ocular contact time, therefore shows a promising future in development. The study results can provide certain reference for the ophthalmic gel of traditional Chinese medicine, which is benefit to promote development on ophthalmic drug delivery system of traditional Chinese medicine.

Biography

Chaoying Li has completed her Ph.D. from West China University of Medical Sciences and postdoctoral studies from Beijing university of Chinese medicine. She is the Director and Professor of Department of Pharmaceutics, Chang Chun University of Traditional Chinese Medicine, she has published more than 20 papers in reputed journals and the Member of the Chinese Pharmacopoeia Commission, the Vice Chairperson of Specialty Committee of TCM Drug Delivery System of World Federation of Chinese medicine Societies.

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