

INTERNATIONAL CONFERENCE ON
“ENVIRONMENT, AGRICULTURE & HUMAN WELFARE: AN OVERVIEW OF
SUSTAINABLE GOALS OF FUTURE”
26TH November, 2023

**Situ Gelling System Loaded with Lomefloxacin for Effective
Management of Ocular Surface Bacterial Infections**

Bhavya Veer Rastogi, Research Scholar, Glocal School of Pharmacy, Glocal University, UP

Abstract

Ocular surface bacterial infections are common eye disorders that can cause significant discomfort, inflammation, and, in severe cases, complications affecting vision. Conventional ophthalmic formulations often suffer from rapid precorneal drainage, frequent administration, and limited drug residence time, which may reduce therapeutic effectiveness and patient compliance. The present study focuses on the development and evaluation of an in situ gelling ophthalmic delivery system loaded with lomefloxacin, a broad-spectrum fluoroquinolone antibacterial agent, for the effective management of ocular surface bacterial infections. The proposed formulation is designed to undergo sol-to-gel transformation after administration to the ocular surface, thereby increasing precorneal residence time and providing sustained drug release. The formulation may be optimized by evaluating parameters such as clarity, pH, viscosity, gelling capacity, drug content, rheological behaviour, in vitro drug-release characteristics, and sterility. The antibacterial effectiveness of the optimized formulation can be assessed against selected ocular bacterial pathogens and compared with conventional lomefloxacin formulations. The in-situ gel approach is expected to provide improved drug retention, controlled release, enhanced antimicrobial activity, and reduced dosing frequency. Furthermore, the formulation may improve patient convenience and minimize drug loss associated with conventional eye drops. The study highlights the potential of stimuli-responsive ophthalmic drug delivery systems as an alternative approach for improving the therapeutic performance of topical antibiotics. Such systems could contribute to more effective and patient-friendly treatment strategies for bacterial infections of the ocular surface.

Keywords: Lomefloxacin, In Situ Gel, Ocular Drug Delivery, Ocular Surface Infection, Bacterial Infection, Ophthalmic Formulation, Sustained Drug Release, Precorneal Residence Time, Fluoroquinolone, Controlled Drug Delivery.