

Latanoprost-Eluting Contact Lens for Treating Glaucoma and Ocular Hypertension

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Glaucoma is a leading cause of irreversible blindness. Latanoprost, a prostaglandin analog, reduces the intraocular pressure (IOP) and is the first line treatment for glaucoma. However, adherence is suboptimal. A sustained release drug delivery device could improve adherence and address one of the major unmet needs in ophthalmology. We have developed a drug-eluting contact lens (L-CL), in which the drug continuously diffuses from a drug-polymer film that is encapsulated in the periphery of a standard contact lens hydrogel. L-CLs have demonstrated in vivo release of latanoprost in amounts comparable to latanoprost eye drops for up to one month. L-CLs also were found to significantly reduce IOP in glaucomatous monkeys more than latanoprost drops. We are proposing a novel prospective, single center, phase I/II clinical trial to evaluate the L-CL. Patients with glaucoma will wear the L-CL for one week, during which safety and comfort will be intensely monitored and evaluated. In addition, IOP will be measured throughout the study and be compared to IOP measurements taken with or without the use of latanoprost drops. The main purpose of this pilot study is to obtain preliminary data on the safety, tolerability, and comfort of the L-CL. A second aim is to assess the efficacy of the L-CL for the treatment of glaucoma or ocular hypertension. The L-CL could eliminate the need for patients to take eye drops on a daily basis and could possibly be more effective than topical drops and improve patient compliance.