



VCU

VIRGINIA COMMONWEALTH UNIVERSITY

“DenTimol: Improved Drug Delivery System for Glaucoma Treatment” VCU #17-006F

Applications

- Drug delivery system for glaucoma
- Reduction of intraocular pressure

Advantages

- Longer lasting drug release
- Reduced dosing schedule
- Improved patient adherence

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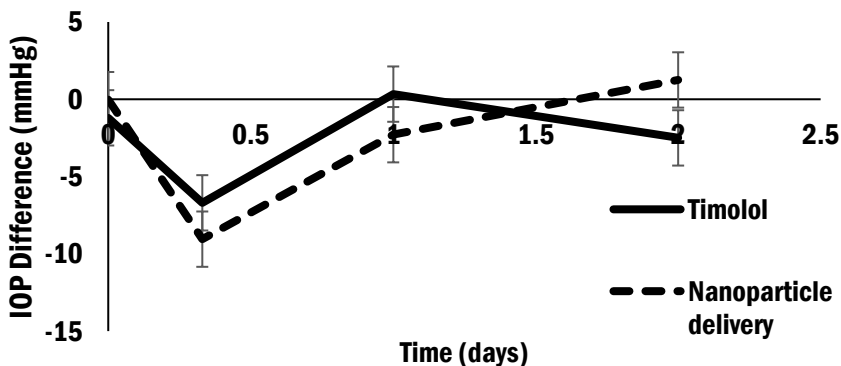
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Technology Summary

Glaucoma affects millions of patients every year leading to severe pain and potential blindness. Current treatments consist of topical eye-drops that lead to reduced intra-ocular pressure, such as the beta-blocker timolol. Due to the poor bioavailability of traditional timolol eye-drops, a repeated and frequent dosing schedule leads to issues with patient compliance. In addition to low patient compliance, the rate of corneal penetration in direct dosing is relatively low and can be improved upon.

This invention consists of attaching the beta-blocker timolol to a nanoparticle vehicle as a novel glaucoma therapy. The nanoparticles allow for enhanced transportation across the mucus membrane, and a steady sustained release of medication to the inner eye. This invention could lead to a stronger release profile over time, allowing for a reduced dependency on patient compliance when treating glaucoma. In addition, increased corneal permeation could lead to high efficiencies and lower dosages. The figure below depicts the change in intraocular pressure in rats when administered using the delivery mechanism versus standard delivery.



Technology Status

This invention has been prototyped, and has been tested *in vivo*.

Patent pending: U.S. and foreign rights available.

This technology is available for licensing to industry for further development and commercialization.