

OCULAR DRUG DELIVERY DEVICES AND METHODS OF USE THEREFORE

Contact lenses with dissolvable nanoneedles that provide burst and sustained ocular drug release.

Ocular drug delivery is very challenging due to the complex and sensitive structure of the eye. Researchers at Purdue University have developed a minimally invasive and effective ocular drug delivery platform. This method enables long term sustained release of therapeutic ocular drugs via a tear-soluble contact lens that leaves behind biodegradable silicon nanoneedles. The tear-soluble contact lens provides an optimal curvature to fit the cornea and it is degraded in less than a minute, enabling initial short-term release of anti-inflammatory drugs and long-term release of therapeutic drugs. This technology directly benefits patients undergoing treatment for chronic diseases or injuries, including glaucoma, cataract, and graft rejection.

Advantages

Minimally invasive

- Long term sustained release
- Initial burst release of anti-inflammatory
- Long-term release of therapeutic drugs
- Demonstrated biosafety and efficacy in lab testing

Applications

- Ocular drug delivery

Technology ID

2022-LEE-69581

Category

Digital Health &
Medtech/Wearable Health Tech
& Biosensors
Pharmaceuticals/Pharmaceutical
Packaging & Delivery Systems
Digital Health &
Medtech/Implantable Medical
Devices

Further information

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- Treatments for glaucoma, cataract, and graft rejection

Technology Validation:

This technology has been validated for efficacy and safety through successful in vivo testing in a rabbit corneal neovascularization (CNV) model.

TRL: 4

Intellectual Property:

Provisional-Gov. Funding, 2021-10-08, United States

PCT-Gov. Funding, 2022-10-10, WO

NATL-Patent, 2024-04-08, United States

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