THERAPEUTIC CONTACT LENSES FOR DRUG DELIVERY

Summary

Our researchers have developed an innovative ophthalmic drug delivery method and novel composition to attach therapeutic or lubricating molecules to the surface of contact lenses. By including drug molecules to the surface of the lens, our technology is a viable replacement for medicated eye drops, which have low patient compliance. Additionally, lubricating molecules attached to the contact lens remove lipids and proteins that stick to the surface of the lens and cause discomfort. This technology utilizes the attraction between fluorocarbons to incorporate molecules on the surface of contact lenses. A short fluorous tag is added to the drug or lubricating molecule to facilitate the fluorous interaction. A simple one-step incubation process is used to adhere drug molecules to the surface of commercially available contact lenses.

Competitive Advantages

- Absorbance of ophthalmic drugs is approximately 12 times greater than using eye drops
- Reduces the frequency of administration of ophthalmic drugs
- Compatible with currently manufactured contact lenses
- Simple and easy method to incorporate into current contact lens manufacturing
- Optical quality of the lens remains unchanged
- Reduces the adherence of lipids and proteins to the surface of a contact lens

Problem Addressed

- The technology increases the absorbance of ophthalmic drugs from 5% to approximately 50%
- These contact lenses eliminate frequent administration of eye drops, which cause low patient compliance
- Preservatives used in eye drops can attach to contact lenses and cause further damage
- The lubricating feature of these contact lenses alleviates discomfort due to lipids and proteins sticking to the surface of the lens

Applications

- Therapeutic contact lenses to replace eye drops for ophthalmic drugs
- Lubricating contact lenses to reduce the symptoms of dry eyes

Meet the Inventor

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