Restoring corneal tissue strength for treatment of degenerative eye diseases

Technology #cu14195

Although corneal collagen crosslinking is an effective method for treating degenerative eye diseases such as progressive myopia, glaucoma, and keratoconus, current crosslinking methods are limited by poor tissue penetration, high potential for infection, and risk of damage to surrounding tissues. This technology is a method of crosslinking collagenous tissues using formaldehyde-releasing agents. This therapeutic approach can be used to restore corneal tissue strength while avoiding the risks associated with existing treatment methods.

Formaldehyde-releasing agents are safe and effective for improving structural integrity in collagenous tissues

Using formaldehyde-releasing agents that are currently employed as cosmetics preservatives, this technology provides a safe method for crosslinking corneal tissue. These formaldehyde-releasing compounds are soluble in aqueous solution, allowing for direct administration to the eye. This technology can be used to treat corneal weakening in diseases such as keratoconus and keratectasia, and can even be used to change the contour of the cornea to increase its refractive power. In addition to ophthalmologic use, these formaldehyde-releasing agents can also be used to strengthen other collagenous tissues, including the sclera, heart valves, skin, tendons, fascia, bone, and cartilage. Moreover, this technology can also be used ex vivo to limit the loss of structural integrity in collagenous tissues being prepared for transplantation or surgical implantation.

The efficacy and potential clinical utility of these compounds has been studied ex vivo in rabbit corneas.

Lead Inventor:

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Applications:

- Corneoscleral tissue crosslinking agent
- Therapeutic for treatment of keratoconus and other degenerative eye diseases
- Treatment for patients with myopia or nearsightedness
• Treatment for ecstasia associated with eye surgeries including LASIK (Laser-Assisted In-Situ Keratomileusis) or PRK (Photorefractive Keratectomy)
• Restoring strength in collagenous tissues, including but not limited to, the cornea, sclera, heart valves, skin, tendons, fascia, bone, and cartilage

Advantages:
• Potent crosslinking agent
• Proven safety record in consumer products
• Avoids exposure to potentially harmful UV light and risky surgical procedures
• Broad, non-ophthalmologic applications

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