

clinical trial

# COLLAGENASE FOR CORNEAL BURNS

New study will test the efficacy of tissue softening enzyme collagenase for restoring sight in acid attack victims

**C**linical studies of a novel approach utilising collagenase to treat chemical burns in the eye has commenced at L V Prasad Eye Institute in Hyderabad.

Collagenase is a tissue-softening enzyme. Application of collagenase to the cornea of the eye softens the underlying tissue, allowing the stem cells situated there to repair any damage, found a study by a team of researchers from Newcastle University, UK, earlier this year.

They recreated the effects of chemical burns and treated the wounded, stiffened areas of the cornea using small and localised doses of collagenase. The enzyme made the area pliable and able to support the patient's own stem cells and promote healing.

Collagenase has already been approved by the USFDA and the European Medicine Agency for several indications, including skin contractures. But the efficacy of the enzyme has not been tested so far for ocular burns.

## Softening to heal

The tissue-softening enzyme can prevent loss of corneal stem cells following an injury, and could prevent patients from losing their sight, researchers believe.

For the first time, collagenase will be used in patients who have suffered acid attacks or industrial accidents. The first-in-man trial will examine how effective the enzyme is at softening the underlying tissue in the eye,



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**Dr Sayan Basu**  
Director, Centre for Ocular Regeneration  
LVPEI, Hyderabad



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**Dr Vivek Singh**  
Lead Scientist, LVPEI

allowing the patients' own stem cells to repair the damage and restore the patient's sight.

"Collagenase softens the tissue. Acid and other chemicals cause hardening and shrinkage of tissue, which hampers proper wound healing. Collagenase may allow the tissue to heal better and faster by softening it," said Dr Sayan Basu, Director for the Centre for Ocular Regeneration, L V Prasad Eye Institute, who conducts the trial.

The trial, which involves 30 patients, is funded by the Ulverscroft Foundation, a UK-based charity that supports organisations helping the visually impaired.

Suitable participants for the trial will be selected by an assessment team at the LVPEI after rigorous medical and ethical approval, and the results from the trial are expected in 2021, said Dr Basu.

Every year, about two million people worldwide become blind due to corneal trauma, with 1 in every 5 cases caused by chemical burns to the eye. Almost 500,000 people a year lose their sight due to chemical burns, including acid attacks, estimates show.

"If the trial is successful, it can save time and money in treating alkali burn patients without the need for long term follow-up and the use of limbal transplantation. Recovery, too, can be faster for the patient," said Dr Vivek Singh, Lead Scientist at LVPEI, associated with the study.

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## CORNEAL TRAUMA

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remains the only solution for irreversible ocular damage. The therapy is exorbitantly expensive.

### Simple and low cost

"The simplicity and relatively low cost of this therapy, compared to existing approaches in which stem cells have to be transplanted, is a game-changer," said Professor Che Connon, the director of the study and leader of the Tissue Engineering Lab at Newcastle University.

The new therapeutic approach greatly expands the number of potential patients being treated for

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corneal burns across the world and may well have applications in other diseases, he added.

If the efficacy in the eye is proven, the use of collagenase could be extended to severe burns in other parts of the body as well, which could be really transformational, commented Dr Basu.

According to him, the treatment could also prove to be useful for treating skin contractures, which are the main causes of life-long disfigurement and stigma in acid attack victims even after they survive the initial brutal assault. 