Soon, stem cell jab to reverse vision loss

**Press Trust of India  |  Los Angeles** **April 15, 2015** Last Updated at 16:22 IST

An injection of stem cells into the eye may slow or reverse the effects of early-stage age-related disorder that causes vision loss, according to researchers, including one of Indian-origin.

Currently, there is no treatment that slows the progression of age-related macular degeneration, which is the leading cause of vision loss in people over 65.

"This is the first study to show preservation of vision after a single injection of adult-derived human cells into a rat model with age-related macular degeneration," said Shaomei Wang, lead author of the study from the Cedars-Sinai Medical Centre in Los Angeles.

The stem cell injection resulted in 130 days of preserved vision in laboratory rats, which roughly equates to 16 years in humans.

Age-related macular degeneration occurs when the small central portion of the retina, known as the macula, deteriorates.

When animal models with macular degeneration were injected with induced neural progenitor stem cells, which derive from the more commonly known induced pluripotent stem cells, healthy cells began to migrate around the retina and formed a protective layer.

This protective layer prevented ongoing degeneration of the vital retinal cells responsible for vision.

Researchers in the Induced Pluripotent Stem Cell (iPSC) Core, directed by Dhruv Sareen first converted adult human skin cells into powerful induced pluripotent stem cells (iPSC), which can be expanded indefinitely and then made into any cell of the human body.

These induced pluripotent stem cells were then directed towards a neural progenitor cell fate, known as induced neural progenitor stem cells, or iNPCs.

"These induced neural progenitor stem cells are a novel source of adult-derived cells which should have powerful effects on slowing down vision loss associated with macular degeneration," said Clive Svendsen, director of the Board of Governors Regenerative Medicine Institute and contributing author to the study.

"Though additional pre-clinical data is needed, our institute is close to a time when we can offer adult stem cells as a promising source for personalised therapies for this and other human diseases," said Svendsen.

Next steps include testing the efficacy and safety of the stem cell injection in preclinical animal studies to provide information for applying for an investigational new drug.

From there, clinical trials will be designed to test potential benefit in patients with later-stage age-related macular degeneration.