Press release

Nanotechnology based corneal stem cell transplant gets Japanese patent

Indo-Japan feat unveils novel potential to solve visual morbidities sans corneal transplant

21 Jan 2016. Corneal endothelial precursor cell transplantation methodology, employing a Nanocomposite gel sheet has been awarded a Japanese patent to Nichi-in Centre for Regenerative Medicine (NCRM) and their Japanese collaborators. This patent (Ref.1), when licensed to interested institutes will help large number of patients suffering from standalone corneal endothelial diseases recover from visual morbidities said Mr. Yoshio Morozumi, chairman of Nichi-In from Tokyo, Japan. Our finding gives a new hope to such patients, as it is now considered that there is no treatment available for regenerating the damaged corneal endothelial cells, except to do a corneal transplantation either fully or partially, which again is marred by the shortage of donor-corneas, he added.

Human cornea has five layers among which three are functionally vital. One such layer, the corneal endothelium which is the inner most layer, when damaged, during cataract surgery or other reasons such as aging, physical injury or infection, leads to significant jeopardy of the vision. Almost 50% of the patients, who require a corneal transplant, have standalone corneal endothelial disease. Corneal endothelium is considered to be one of the most fragile and sensitive tissues in the human body which is very difficult to be cultured outside the body. In the present accomplishment, the Indo-Japan team has not only cultured them in the lab, but have been able to transplant the same (Ref.2) on to bovine cornea using a Nanocomposite sheet jointly developed with Prof. Kazutoshi Haraguchi, presently Professor, Biomaterial department, Nihon University, Japan.

According to NCRM, they are planning to license the technology to interested partners, which after necessary clinical trials is likely to help thousands of patients all over the world to recover their vision without corneal transplant. In India alone, annually 30000 patients and in Japan around 4000 patients are likely to be helped with this feat.

Ref.1: The patent certificate no. 5863089 Dt., 08Jan2016 by the Japan patent office

Ref.2: Parikumar et al., Current Eye Research, 39 (5), May 2014, 522-526
(URL: http://www.ncbi.nlm.nih.gov/pubmed/24144454)

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This press release is available online at: http://www.ncrm.org/media/pr21jan16.htm