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Highly transparent, liquid absorbing film for ophthalmic applicationYu-Bing Liou^{1,2}¹Industrial Technology Research Institute, Taiwan²National Taiwan University Hospital, Taiwan

Tissue and stem cell therapies are an important research for repairing ocular tissues especially in the cornea and retinal regeneration. Devices for ophthalmic use required not only transparency and moisture absorbency it also needs to have the right mechanical and physical characteristics to match the clinical needs. For this study we have identified the suitability of the transparent film technology for ophthalmic use. Collagen and a degradable polymer are composited to a suitable combination film. This film is capable of conforming to any surfaces. Other physical characteristics of this film possesses is that the film can be trimmed either under dry or wet conditions without tearing. The degradation of the film is controlled by a crosslinking process. The results show that in the 5U collagenase solution the collagen film degraded in a couple of hours and up to 10 days by different crosslinking treatments. The transparency of the film was also greater than 90% during the degradation process. For the cell test, we observed good compatibility for the mesenchymal stem cells and the human corneal epithelial cells. The attachment of mesenchymal stem cells and human corneal epithelial cell was 78.5% and 76.9%. In the *in vivo* test, we observed good biocompatibility and the film also remained transparent until completely degraded. Furthermore, since this film is designed to degrade overtime, the degradation rate can be adjusted to suit the clinical needs. Therefore, with all of these features combined this transparent, moisture absorbing film can have a wide variety of applications in the biomedical field.

Biography

Yu-Bing Liou is currently a PhD Researcher in Biomaterial Technology Department, Regeneration Medicine Technology Division at Biomedical Technology and Device Research Laboratories.

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