Drug-loaded contact lenses developed to treat eye diseases
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SINGAPORE, 28 Oct 2004 (Deutsche Presse-Agentur) – Scientists in Singapore announced on Thursday the development of drug-loaded contact lenses to treat such diseases as glaucoma and help those with consistently dry eyes.

Dr. Edwin Chow and Dr. Yi-Yan Yang disclosed the breakthrough in producing polymeric lens materials riddled with minuscule channels through which medication can be administered directly onto the eyeball.

Drug-delivering contact lenses have been the subject of considerable competition in the research world.

The new ones developed at the Institute of Bioengineering and Nanotechnology can be fabricated easily and cost effectively, the researchers said.

"Glaucoma is rapidly becoming the second major cause of blindness in Asia after cataracts," said Chow. "Contact lens wearers with dry eyes may also benefit from this invention, as the material can be modified to produce self-lubricating contact lenses."

The material is compatible with human skin cells, as well as human corneal epithelial cells, he noted. It is also permeable to gases such as oxygen and carbon dioxide, water and components of the tear fluid.

The new lenses could replace eye drops, which the scientists said are not an effective method of delivering medication as 95 per cent is wasted.

The drops usually mix with tears drain into the nasal cavity, where they can flow through the blood stream to other organs and cause serious side effects, they said.

"Dosage through eye drops is inconsistent and difficult to regulate," Chow noted, "as most of the drugs are released in an initial burst of concentration."

The researchers said drugs are added directly into the solution that becomes the new lens.

The combination is poured into a mould to make the lens. When hard, the lens is full of nanometre-size channels, a billionth of a metre or 100,000 times smaller than the width of a strand of hair.

"We can further control the drug delivery rate, while retaining the appropriate lens clarity," Chow said.

The drugs are released slowly into the tiny channels which leak them onto the surface of the eye.

Without treatment, nine in ten glaucoma sufferers go blind.

The first stage of trials was done on animals. Patents have also been filed.