BPC 2007
The medicines maze
BALANCING RISKS AND BENEFITS
Manchester Central
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NEW GEL COULD MAKE EYE INJECTIONS A THING OF THE PAST

New gel to treat retinal diseases in development

New research presented at the British Pharmaceutical Conference (BPC) in Manchester shows that a new gel for under the eyelid could provide an innovative way of delivering drugs to treat age-related retinal diseases such as wet macular degeneration – potentially making some invasive eye injections a thing of the past.

Wet macular degeneration is a leading cause of blindness in UK. It is a condition which causes a thinning of the inner eye lining and abnormal blood vessel growth that leads to retinal detachment.

Recently, treatments have become available that can regress abnormal blood vessel growth. However, until now, the only effective way to deliver these drugs to the retina has been through direct injection to the back of the eye. Standard eye drops are not suitable for treatment of retinal disease because they cannot deliver enough drugs to the back of the eye. Normal blinking reflex and the presence of tear fluid on the surface of the eye act to remove applied eye drops within a matter of seconds, reducing the amount of drug that will be able to move from the front of the eye to the retina. It has been estimated that less than 5% of eye drops could reach the anterior part of eyes and less than one millionth of a drop could reach the retina through topical drug delivery.[1, 2]

PhD researcher Yvonne Chen from the University of East Anglia's School of Pharmacy, said: "Available treatment for retinal disease needs to be administered through an injection into the eye, which is highly invasive and can be distressing to patients, as well as potentially causing further complications."

Against this background, Yvonne set out to develop an alternative way of delivering drugs to the retina based on “smart” polymers that behave as liquids at room temperature, but rapidly transform (in less than a minute) to a gel at body temperature. This unique feature offers the advantages of easily adding a drug to a formulation (especially for heat-sensitive biologically-active drugs) and delivering drugs locally.

The liquid is injected under the eyelid and deposits on the white of the eye. Once in contact with the increased temperature of the body, the liquid converts to a gel and provides a depot (or reservoir) for the drug, allowing it to slowly move towards the retina over several hours. This gel system also prolongs the drug release duration so that controlled drug release can be achieved. It is hoped the less invasive gel will lead to better compliance.

Yvonne said: “Experiments have shown that this new gel may well prove to be a breakthrough in treating retinal diseases, with major benefits to patient comfort and healthcare outcomes.”

Ends

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Notes to editors

The British Pharmaceutical Conference - entitled “The medicines maze: balancing risks and benefits” - takes place from 10th to 12th September, 2007, at Manchester Central (formerly Manchester International Convention Centre). The theme of BPC 2007 is reflected throughout the programme, with keynote speeches and workshops addressing crucial technical and professional issues that are facing pharmacy today. The conference will showcase the latest

developments in pharmaceutical science and practice research and include discussion and debate led by expert speakers.

References

1. Lang JC. Ocular drug delivery: conventional ocular formulations. Adv. Drug Deliv. Rev. 1995;16:39-43.

2. Maurice, DM. Drug delivery to the posterior segment from drops. Surv. Ophthalmol 2002;47, S41-S51.