Toward simplifying treatment of a serious eye infection

May 5 2010

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Scientists are reporting development of a potential new way of enabling patients with bacterial keratitis to stick with the extraordinarily intensive treatment needed for this potentially blinding eye infection. The disease affects more than 500,000 people each year worldwide, including 30,000 people in the United States. The study is in ACS' *Molecular*

Pharmaceutics.

Howida Kamal Ibrahim and colleagues explain that bacterial keratitis is a rapidly-progressing infection of the cornea, the clear tissue covering the front of the eye. Treatment method requires that patients frequently use antibiotic eye medicine — one drop every 5 minutes to start and then more drops every 15-30 minutes for up to 3 days — and daily use of anti-inflammatory drugs. This intensive treatment regimen is difficult for patients to follow and often requires putting them into a hospital to assure they get adequate treatment.

The scientists describe the development of a new two-in-one formula that combines the antibiotic and anti-inflammatory drug into a single medication. The eye drops contain nano-sized particles — each about 1/50,000th the width of a human hair — of an antibiotic (gatifloxacin) and an anti-inflammatory drug (prednisolone) coated with a substance that keeps the medicine in the eye longer. In tests with lab animals, the drops delivered five times more medication to the eye and it remained there three times longer than existing medicine, the scientists say. For patients, the new drops could mean an easier course of treatment that can be done more often out-of-hospital.

More information: "Mucoadhesive Nanoparticles as Carrier Systems for Prolonged Ocular Delivery of Gatifloxacin/Prednisolone Bitherapy", *Molecular Pharmaceutics*.

Provided by American Chemical Society