Research finds drug candidate slows age-related macular degeneration

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Research results from the Case Western Reserve University School of Medicine show that the progression of age-related macular degeneration (AMD) is markedly slowed in new laboratory-engineered mice when they received treatments of retinylamine, a trial drug that has been tested in a medical school lab. AMD is a leading cause of vision loss in Americans 60 years of age and older.

The findings from the National Eye Institute-funded research are reported in the prestigious Journal of *Biological Chemistry*.

Led by postdoctoral researcher Akiko Maeda, an investigator in the lab of one of her co-authors, Krzysztof Palczewski, the findings provide evidence for biochemical change in the retina that resemble AMD. Palczewski is chair and the John H. Hord Professor of Pharmacology at the School of Medicine. While the drug itself was developed in Palczewski's former lab at the University of Washington, it was brought to Case Western Reserve when he and his team of researchers, including Maeda, arrived here in 2005.

Palczewski says AMD currently isn't usually treated until toward the end of the disease. However, with the discovery in his lab by Maeda and her research team, retinylamine can potentially prevent the rapid degeneration of the eye, slowing the rate of progression of AMD.

As humans go through the aging process, it eventually affects our vision. A fraction of us will progress further and potentially develop AMD.

Through their work on mouse models, Maeda and her team of researchers have learned to modify the genes that establish the rate of changes related to AMD. But the biochemical trigger of these changes had not been understood until now as a result of the retinylamine treatments.

"We have proven this observation, genetically, biochemically and pharmacologically," Palczewski said. "Dr. Maeda, who studies retinal degenerative diseases in my lab and works to develop models that will facilitate the evaluation of the safety and effectiveness of drug candidates designed to combat retinal disease in humans, has done superb work in this area. We're very excited about the potential this outcome represents."

AMD is a disease associated with aging that gradually destroys sharp, central vision. Central vision is needed for seeing objects clearly and for common daily tasks such as reading and driving. AMD affects the macula, the part of the eye that allows you to see fine detail. AMD causes no pain.

In some cases, AMD advances so slowly that people notice little change in their vision. In others, the disease progresses faster and may lead to a loss of vision in both eyes. An estimated 8 million older-age Americans are at high risk to develop advanced AMD. Of these 8 million, 1.3 million would develop advanced AMD within five years.

"Until now, with the discovery in our lab, the genesis of that progression wasn't known," Palczewski said. "Now we have the potential to intervene in the middle of the disease's advancement so we can prevent rapid degeneration of the eye. The importance of this work also is illustrated by the five-year K08 award made to Dr. Maeda by the National Eye Institute."

Source: Case Western Reserve University