AR-13503 Implant

AR-13503 (an active metabolite of the previously characterized compound, AR-13154[S]) is a pre-clinical stage investigational compound discovered by Aerie scientists. It has not been approved by the FDA. An inhibitor of Rho kinase and Protein kinase C (PKC), AR-13503 has the potential to provide an entirely new mechanism and pathway for the treatment of wet age-related macular degeneration (AMD), diabetic retinopathy, and related diseases of the retina.[1]

Promising Preclinical Results

In a preclinical model of proliferative diabetic retinopathy, AR-13154(S), the precursor molecule to AR-13503, reduced total neovascular area by numerically higher levels than a current market-leading anti-vascular endothelial growth factor (VEGF) product and demonstrated additive efficacy when combined with that product.[1] AR-13154(S) also has demonstrated efficacy as monotherapy in a preclinical laser-induced neovascularization model of wet AMD.[1] While AR-13503 has not been tested in humans, this experiment confirms its potential as monotherapy and as an adjunct to anti-VEGF therapies.

Preclinical results: AR-13154(S), a precursor molecule to AR-13503, provides additive efficacy to aflibercept (Eylea®) in a model of diabetic retinopathy[1]

For more information on Eylea please see the product webpage

Preclinical experiments have also demonstrated the potential of formulating AR-13503 as an injectable bio-erodible implant (utilizing a polymer developed by DSM, a global, science-based company with whom we have entered a collaborative research, development, and licensing agreement) to provide sustained drug delivery to the back of the eye. Results have shown linear, sustained elution rates over several months and achievement of target retinal drug concentrations.[1]

We plan to file an Investigational New Drug (IND) application and bring AR-13503 to the clinic in 2019.

About Age-related Macular Degeneration

AMD is a common condition that is one of the leading causes of vision impairment in people over 50. The National Eye Institute predicts that by 2050, the number of people with AMD in the United States will double, increasing from 2.07 million to 5.44 million.[2] AMD destroys the macula, the small region in the middle of the retina responsible for central vision, thereby reducing the ability to see objects in the center of one's field of vision. There are three stages of AMD—early, intermediate, and late—with late-stage disease further classified into geographic atrophy (or dry) AMD and neovascular (or wet) AMD, both of which produce vision loss. Wet AMD is associated with the growth of new, abnormal blood vessels in the retina that leak fluid, causing inflammation and further damage.[3] It can produce rapid and severe vision loss.

1. Lin C-W, Sturdivant JM, deLong MA, Kopczynski CC. Effectiveness of AR-13154 Monotherapy and Combination Therapy in Animal Models of Wet Age-related Macular Degeneration and Proliferative Diabetic Retinopathy. Poster presented at: The Annual Meeting of the Association for Research in Vision and Ophthalmology, 2016 Seattle, WA. **2.** National Eye Institute. Age-Related Macular Degeneration (AMD). National Institutes of Health.https://nei.nih.gov/eyedata/amd. Accessed January 9, 2018. **3.** National Eye Institute. Facts About Age-Related Macular Degeneration. National Institutes of Health. https://nei.nih.gov/health/maculardegen/armd_facts. Accessed January 9, 2018. **4.** Glendenning AD, Crews K, Sturdivant J, deLong MA, Kopczynski CC, and Lin C-W. Sustained Release, Biodegradable PEA Implants for Intravitreal Delivery of the ROCK/PKC Inhibitor AR-13503. Poster presented at the Annual Meeting of the Association for Research in Vision and Ophthalmology, 2018 Honolulu HI.