



## **Araim's Cibinetide Enhances Endothelial Stem Cell Mediated Vascular Regeneration for Treatment of Retinal Ischemia**

TARRYTOWN, NY, April 1, 2019. Cibinetide, the lead compound of [Araim Pharmaceuticals, Inc.](#), a clinical stage biotechnology company pioneering the development of innate repair receptor (IRR) activator platform technology, has recently been shown to improve the efficacy of endothelial colony forming cell (ECFC) transplantation to repair the vasculature in the retina. The ECFC is a type of stem cell that is capable of healing and rebuilding the retina's damaged blood vessels.

Research presented in a recently published paper, [O'Leary et al. Exp Eye Res 2019](#), sought to evaluate ECFC as a therapeutic cell treatment in a mouse model of retinal ischemia, and the ability of cibinetide to enhance the efficacy of this treatment. Cibinetide uses the body's immune-mediated innate repair system to activate tissue repair due to stress or injury. In vitro, cibinetide was able to improve survival of ECFCs exposed to oxidative stress. Additionally, systemic treatment of the mice with cibinetide led to a decrease in inflammatory mediators, such as IL-1 $\beta$  and TNF- $\alpha$  in the ischemic retina and brain microglia, and homing of the injected ECFCs to the damaged vessels was significantly enhanced, repairing vessels and revascularizing the retina. Alan Stitt, Queen's University, Belfast, UK, the lead investigator remarked "we have found that the ability to significantly suppress the stressors in the retinal environment allows the transplanted cells to survive and home to the targets for repair. Cibinetide significantly enhances the clinical value of this cell therapy and has clear potential to advance the approach into a viable treatment option for this blinding disease."

Cibinetide works via binding to the IRR which becomes expressed in response to stress, such as ischemia. Ischemia leads to a cascade of inflammatory signals, including cytokine release and cell death. Binding of cibinetide to the IRR leads to activation of multiple intracellular signaling pathways that decrease inflammation while simultaneously activating cellular and tissue repair. Effects similar to those presented have been seen in preservation and repair of vessels in burned skin ([Bohr et al., PNAS 2013](#)), and the ability of cibinetide to enhance transplantation of islet cells in diabetic mice ([Watanabe et al., Transplantation 2015](#)).

The retina contains the light sensing neurons at the back of the eye. It has one of the highest oxygen consumption rates of any tissue in the body. Ischemia, decrease or absence of the blood supply delivering oxygen and nutrients, can result from blockage of the vessel to the retina or diabetes-related vascular issues. Progressive retinal ischemia causes up-regulation of inflammatory mediators within the eye, leading to abnormal growth of blood vessels out of the retina and/or leakage, both of which cause vision loss and blindness if untreated. Available treatments include surgery, treatment with steroids or anti-VEGF eye injections, or laser photocoagulation. These treatments can be effective, but often have side effects, and do not address the underlying cause of the disease. This emerging treatment modality of delivering therapeutic stem cells directly into the eye is currently being evaluated, with the hypothesis they would provide neuroprotection and vascular regeneration, thereby preventing progression to vision loss. The addition of cibinetide enhances this effect.

## **About Retinal Ischemia**

Retinal Ischemia, defined as decreased blood flow to the retina, underlies the pathology of several major retinal diseases including diabetic retinopathy, retinopathy of prematurity, and retinal vascular occlusive disease. Ischemia causes overproduction of VEGF leading to increased vessel permeability and neovascularization. Current treatments are anti-VEGF injections into the eye, laser repair and vitrectomy, which are effective but do not address the underlying ischemia in the retina.

## **About Araim Pharmaceuticals, Inc.**

[Araim Pharmaceuticals, Inc.](http://www.araimpharma.com/) is a private clinical stage biopharmaceutical company with a library of peptides that activate the body's own immune system to repair the damage of chronic disease and slow the aging process. We are focused on delivering novel therapies that slow, stop, and reverse chronic conditions. Through an extensive pre-clinical program, Araim's library of IRR agonists have demonstrated in a wide-array of disease conditions to activate the endogenous system to reduce inflammation, stop the spread of injury, and activate healing and regeneration. Our most advanced program, cibinetide, has completed Phase 2 trials in Diabetic Neuropathy and Sarcoid Neuropathy with demonstrated nerve regeneration. <http://www.araimpharma.com/>

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