An Iron Chelator for Protection against Retinal Degeneration

Published date: Feb. 6, 2017

Technology description

Age-related macular degeneration, blindness, retinal degeneration, iron

Problem

Degenerative diseases of the retina such as age-related macular degeneration (AMD) are the leading cause of vision loss and blindness. Approximately 120 million people worldwide suffer from AMD. There is a need to further understand the pathogenesis of retinal degeneration in order to develop new therapeutics to prevent and treat these diseases.

Solution

Iron has been implicated in the pathogenesis of several degenerative diseases including those affecting the retina (e.g. AMD) and in neurodegenerative diseases such as Alzheimer’s Disease and Parkinson’s Disease. Previous studies have shown that iron-mediated oxidative stress can lead to cell death. Iron levels may also be elevated in disease states, such as the case for AMD where iron is elevated in the retina. Dr. Joshua Dunaief and researchers in his lab hypothesized that the iron chelator salicylaldehyde isonicotinoyl hydrazone (SIH) may be effective in preventing retinal degeneration. Studies in human retinal pigment epithelial (RPE) cells demonstrated that SIH was protective against cell death caused by stressors including hydrogen peroxide, staurosporine, and blue light. These findings suggest that SIH may have a therapeutic role in retinal degenerative diseases.

Reference Media

•Lukinova et al. Invest Ophthalmol Vis Sci, 2009, 50: 1440-7

Application area

- Age-related macular degeneration
- Retinitis pigmentosa
- Stargardt disease
- Usher syndrome

Advantages

- Small molecule for prevention of retinal degeneration

Institution

University of Pennsylvania

Inventors

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