

Unsuspected intrinsic property of melanin to dissociate water can be used for the treatment of CNS diseases

Herrera A.S.

Esparza M.C.A.

Arias P.E.S.

Ávila-Rodríguez M.

Barreto G.E.

Li Y.

Bachurin S.O.

Aliev G.

Retinal adhesion mechanisms in mammals are quite complex and multifactorial in nature. To date, these mechanisms are incompletely understood due to a variety of chemical, physical, and physiological forces impinging upon retinal tissue: retinal pigment epithelium, nearby tissues as sclera and vitreous, the subretinal space, and the highly complex interphotoreceptor matrix that fills subretinal space. The adhesion of the retina to the choroid, rather than anatomical, is a dynamic process, as the retina detaches a few minutes after life ceases. The adhesion mechanisms described in the literature, such as intraocular pressure and the oncotic pressure of the choroid that seems to push the retina towards the choroid, the delicate anatomical relationships between the rod and cone photoreceptors, the retinal pigment epithelium, the existence of a complex material called interphotoreceptor matrix, as well as other metabolic and structural factors, still cannot explain the remarkable features observed in the adhesion mechanisms between the photoreceptor layer and retinal pigment epithelium cells. The unexpected intrinsic property of melanin to absorb light energy and transform it into chemically based free energy can explain normal adhesion of the sensory retina to the pigment epithelium. In this article, we explore and highlight this explanation, which states that it is definitely able to provide a new treatment avenue against devastating neurodegenerative properties. © 2016 Bentham Science Publishers.

Melanin

Oncotic pressure

Pharmacological effects

Photoreceptors

QIAPI-1- (Medical enhancer of human photosynthesis or chemical energy modulator)

Retina

melanin

melanin

water

age related macular degeneration

Article

blood flow

central nervous system disease

circulation

conceptual framework

eye movement

human

intraocular pressure

intrinsic activity

oncotic pressure

pigment epithelium

vitreous body

animal

Central Nervous System Diseases

drug effects

metabolism

retina

treatment outcome

Animals

Central Nervous System Diseases

Humans

Melanins

Retina

Treatment Outcome

Water