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Protecting retinal cells against cigarette smoke components

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Age-related macular degeneration (AMD), a macular neurodegenerative disease, is the leading cause of permanent vision loss in the elderly population worldwide. The prevalence of this disease is expected to increase in the coming years as people live longer. Cigarette smoking is one of the strongest factors associated with developing the most severe form of AMD. Cigarette smoke components (CSC), such as acrolein, nicotine, benzo(e)pyrene, hydroquinone, catechol, chrysene and 2-ethylpyridine, are hazardous to human health including the eye. Several recent research studies have shown the damaging effects of CSC on retinal pigment epithelial cells, retinal neurosensory cells, microvascular endothelial cells and MULLER cells involve many complex molecular pathways. The mechanisms of CSC-induced toxicity on these cells include oxidative stress, mitochondrial dysfunction, and apoptosis. However, genistein, resveratrol, memantine, epicatechin, and alpha-lipoic acid have shown potential to reverse the toxic effects of CSC on these retinal cells. Therefore, their administration may improve or delay development of AMD.

Biography

Saffar Mansoor, Ph.D. completed his postdoctoral training in the Department of Ophthalmology, University of California Irvine. He is now a Research Associate in the School of Medicine, Case Western Reserve University. He has been working in the area of eye research for several years, and has been serving as a reviewer in well-respected journals and as an international editor of the medical journal MED PHOENIX.

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