




Anna Duarri

CELLUX

CeO₂ Nanoparticles-assisted stem-cell therapy: an innovative nanopharmaceutical approach to treat retinal degenerative diseases

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Chronic inflammation is now regarded as a major pathogenic pathway common in many different pathologies. Age-related Macular Degeneration (AMD) is a neurodegenerative and complex disorder with multifactorial etiology, currently inevitable and orphan of treatment, that represents a major cause of blindness in people over 50 and affects millions of people worldwide. Its progression is associated to an increase of oxidative stress and inflammatory response in the eye leading to retinal cell death. Recently, a new agent has been added to the group of antioxidant/anti-inflammatory substances with therapeutic properties: cerium oxide nanoparticles (CeO₂NPs). CeO₂NPs have a unique electronic structure that when reduced

to the nanoscale, oxygen defects appear at their surface, behaving as sites for free radical scavenging. Thus, the main objective of CELLUX is to develop a novel pharmaceutical-based CeO₂NPs eye drops to treat AMD that in combination with stem cell-based therapeutic strategies, will not only stop degeneration but restore vision.

