Therapeutic potential of omega 3 fatty acid supplementation in Macular Degenerations

Dr Tassos Georgiou
Director and founder of Ophthalmos Research and Educational Institute

Macular degenerations contribute a substantial burden to society and healthcare systems as the primary cause of blinding diseases and low vision. There is no effective treatment available that stops progression or improves vision in patients with macular degenerations.
Dry Macular Degeneration accounts for 80% of all moderate to advanced form to the disease. Its Juvenile form is called Stargardt disease, and it is the most common inherited macular dystrophy in children. It typically presents during the first two decades of life and it often progresses to legal blindness. Dry Macular Degeneration and its juvenile form occur due to the accumulation of oxidised lipoproteins (A2E)and free radicals in the retina and the choroid of the eye. This accumulation results in oxidative stress and a decrease in the number of retinal pigment epithelium (RPE) and photoreceptor cells, which leads to blurring of central vision and eventually blindness.
Dr Georgiou and his research team at Ophthalmos Institute have performed scientific research on established murine models of several ocular pathologies to confirm the efficacy of ω3-PUFA treatment. These data provide insight into the neuroprotective role of ω3-PUFAs against Retinal Ganglion Cells and photoreceptor damage. Results obtained from a preclinical study indicated not only a protective effect of 3-month administration of ω3-PUFAs, against photoreceptors' loss in the $CCL2^{-/-}$ mouse model of dry Macular Degeneration but also a regenerative potential on photoreceptor cells. In a Stargardt mice model treated with ω3-PUFAs for 3 months results have shown significant reduction of A2E levels in the retina and significant reduction of lipofuscins in the RPE cells. The importance of assessing AA/EPA blood ratio (when ≤ 2) was emphasised in all these studies in order for the dosage of ω3-PUFAs to be adjusted with the aim to provide the maximum therapeutic effect.