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Nutritional and environmental influences on mitochondrial function, cell signaling and chronic eye disease.

In the last 40 years a global epidemic of chronic non-communicable diseases has emerged, driven by a combination of overconsumption of ultra-processed foods and environmental toxins. The result is alteration in metabolic and cell signalling processes leading to obesity, mitochondrial dysfunction, insulin resistance, inflammation, vascular endothelial dysfunction and dysbiosis which are the unifying factors which underlie the majority of chronic non-communicable diseases.

Common chronic ophthalmic diseases, such as age-related macular degeneration (AMD), glaucoma, and diabetic retinopathy, are the ophthalmic manifestations within the spectrum of chronic non-communicable diseases, sharing a common aetiology.

This paper aims to raise awareness of the science at a cellular level underlying chronic non-communicable eye diseases. In addition, it suggests an upstream approach to nutrition and lifestyle which offers the potential to both improve patient health and improve outcomes in the management of chronic ophthalmic and systemic non-communicable diseases. These concepts need to be given greater emphasis in medical educational curricula. The epidemic of chronic non-communicable diseases overlaps with socioeconomic and environmental pressures which governments and economies are struggling to manage.

Keywords: Diet; Mitochondria; Microbiome; Vascular endothelium; Glycocalyx; Lifestyle

Biography

Dr. Russell Phillips is a healthcare professional and researcher affiliated with the McKenzie Clinic, Australia. He is involved in clinical practice and evidence-based approaches aimed at advancing patient care and improving health outcomes. His work reflects a commitment to professional development, research, and the advancement of healthcare practices.