

Biological Effects of Saffron as a Retinal Neuroprotectant: Preclinical Studies and Early Clinical Results

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Saffron, the well-known spice long used in food and traditional medicine, contains more than 150 volatile and aroma-yielding compounds and many non-volatile biologically active components, including carotenoids (zeaxanthin, crocetin) and α - and β -carotenes. Its golden colour comes from α -crocin, a water-soluble biogentobiose ester of crocetin, its flavour from the glucoside picrocrocin. Its most potent antioxidant ingredients are crocin and crocetin, a carotenoid dicarboxylic acid that forms the core of crocin. Recently we reported the effectiveness of saffron in protecting retinal photoreceptors from light and genetic damage in rat models, and have commenced an approved double-blind trial of dietary saffron in human age-related macular degeneration (AMD). Participants met the following inclusion criteria: Snellen visual acuity of 0.4-0.9; a clinical diagnosis of ARM by direct and indirect ophthalmoscopy and retinal biomicroscopy; clear optical media and normal color vision (Farnsworth Panel D-15); freedom from other ophthalmic and from systemic disease; no history of medication known to affect macular function; and steady, central fixation. The principal outcome measures were the amplitude and phase of the focal (central 18°) electroretinogram (fERG) to 41 Hz flicker. In an open pilot study of an AMD patient, fERG increased in amplitude by 150% over a 4 month period and fERG phase and visual acuity were stable. Although these preliminary findings require confirmation by the controlled trial, dietary saffron shows the potential as a retinal neuroprotectant in early AMD.