

Issue 87

Monday July 2, 2012

This free weekly bulletin lists the latest published research articles on macular degeneration (MD) as indexed in the NCBI, PubMed (Medline) and Entrez (GenBank) databases. These articles were identified by a search using the key term "macular degeneration".

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Drug treatment

Graefes Arch Clin Exp Ophthalmol. 2012 Jun 26. [Epub ahead of print]

Prospective study evaluating the predictability of need for retreatment with intravitreal ranibizumab for age-related macular degeneration.

Mantel I, Deli A, Iglesias K, Ambresin A.

Ophthalmology Department of the University of Lausanne, Jules-Gonin Eye Hospital, Lausanne, Switzerland, irmela.mantel@fa2.ch.

PURPOSE: To investigate the rhythm and predictability of the need for retreatment with intravitreal injections of ranibizumab for neovascular age-related macular degeneration (nAMD).

METHODS: This prospective study enrolled 39 patients with treatment-naïve nAMD. After three loading doses of intravitreal ranibizumab, patients underwent an intensified follow-up for 12 months (initially weekly, then with stepwise increases to every 2 weeks and to monthly after each injection). Patients were retreated on an as-needed basis if any fluid or increased central retinal thickness (CRT) ($>50\mu\text{m}$) was found on spectral domain optical coherence tomography (OCT). Statistical analysis included patients who received at least two retreatments (five injections).

RESULTS: A mean of 7.5 injections (range 0-12) were given between months 3 and 15. The mean visual acuity increased by 13.1 and 12.6 ETDRS letters at months 12 and 15 respectively. Two or more injection-retreatment intervals were found in 31 patients. The variability of their intra-individual intervals up to 14 weeks was small (SD 0-2.13 weeks), revealing a high regularity of the retreatment rhythm. The SD was correlated with the mean interval duration ($r = 0.89$, $p < 0.001$). The first interval was a good predictor of the following intervals (regression coefficient $=0.81$). One retreatment criterion was stable in 97 % of patients (cysts or subretinal fluid).

CONCLUSION: The results of this study demonstrate a high intra-individual predictability of retreatment need with ranibizumab injections for nAMD. These findings may be helpful for developing individualized treatment plans for maintained suppression of disease activity with a minimum of injections and visits.

PMID: 22733165 [PubMed - as supplied by publisher]

J Ocul Pharmacol Ther. 2012 Jun 25. [Epub ahead of print]

Intravitreal Ranibizumab for the Treatment of Cystoid Macular Edema in Irvine-Gass Syndrome.

Demirel S, Batioğlu F, Ozmert E.

Department of Ophthalmology, Ankara University Faculty of Medicine , Ankara, Turkey .

Purpose: To evaluate the functional and anatomical outcome after intravitreal ranibizumab injection in 2 patients with cystoid macular edema (CME) related to Irvine-Gass syndrome.

Methods: Two patients with pseudophakic CME refractory to current standard topical treatment were enrolled in this study. Intravitreal (0.5 mg/0.05 mL) ranibizumab injection was performed. Baseline visits included best-corrected visual acuity (BCVA), a fundus examination, optical coherence tomography (OCT), and fundus fluorescein angiography (FA). The main outcome measures were changes in visual acuity, retinal thickness on OCT, and complications related to treatment.

Results: FA and OCT confirmed the diagnosis of pseudophakic CME in both cases. The initial BCVA was 5/100 in the first case. After 1 injection of intravitreal ranibizumab, retinal edema totally regressed and BCVA improved to 6/10. The central macular thickness (CMT) measured with OCT was 379 μ m at baseline and decreased to 227 μ m at the 16-month visit. The initial BCVA was 5/10 in the second case. It improved to 8/10 after 2 ranibizumab injections and remained unchanged at the 21-month visit. The CMT measured with OCT was 419 μ m at baseline and decreased to 243 μ m at the final follow-up. There were no ocular or systemic complications related to the intravitreal injections.

Conclusion: Intravitreal ranibizumab appeared to be an effective treatment of macular edema related to Irvine-Gass syndrome. Prospective controlled studies are warranted to compare the long-term safety and efficacy between intravitreal ranibizumab and other treatment options in cases of Irvine-Gass syndrome.

PMID: 22731243 [PubMed - as supplied by publisher]

Case Report Ophthalmol. 2012 May;3(2):200-204. Epub 2012 Jun 12.

Long-Term Follow-Up of Intravitreal Ranibizumab for the Treatment of Choroidal Neovascularization due to Choroidal Osteoma.

H Y Wu Z, Y Y Wong M, Y Y Lai T.

Department of Ophthalmology and Visual Sciences, The Chinese University of Hong Kong, Hong Kong, SAR, China.

Abstract

Choroidal osteoma is an uncommon benign osseous intraocular tumor that typically affects young adult women. Choroidal neovascularization (CNV) is one of the complications that can develop in eyes with choroidal osteoma. We present a case of CNV secondary to choroidal osteoma treated with intravitreal ranibizumab. A 57-year-old lady presented with painless loss of vision with a right-eye visual acuity of 20/800. Fundus examination showed a well-demarcated yellowish peripapillary choroidal osteoma with associated retinal and subretinal hemorrhage due to CNV. Three intravitreal ranibizumab injections at monthly intervals were given and her visual acuity improved to 20/30 following treatment. After 1.2 years of follow-up, the right eye visual acuity was maintained at 20/30 with no evidence of CNV recurrence. Our findings suggest that intravitreal ranibizumab may be an effective therapeutic option for treating CNV secondary to choroidal osteoma.

PMID: 22740831 [PubMed - as supplied by publisher]

Cutan Ocul Toxicol. 2012 Jun 27. [Epub ahead of print]

Short-term impact of intravitreal ranibizumab injection on axial ocular dimension and intraocular pressure.

Goktas A, Goktas S, Atas M, Demircan S, Yurtsever Y.

Department of Ophthalmology, Training and Research Hospital , Kayseri , Turkey.

Objective: To evaluate the short-term impact of intravitreal ranibizumab injection on axial ocular dimension (AOD) and intraocular pressure (IOP).

Methods: A total of 31 patients who received 0.05 mL intravitreal ranibizumab injection (IRI) for age-related macular degeneration and 30 healthy volunteers were enrolled in the study. AODs i.e. anterior chamber depth and axial length were measured with IOL Master and IOP with noncontact tonometer before and 5 min, 30 min and 1 day after the injection.

Results: Five minutes after the injection, mean IOP increased to 24.8 ± 9.5 (13-46) mmHg from 14.5 ± 2.3 (10-18) mmHg ($p < 0.001$). Thirty minutes after the injection, IOP decreased a mean level of 17.3 ± 4.1 (11-26) mmHg. The change in axial length and anterior chamber depth measurements did not reach a statistical significance across the time points ($p > 0.05$, for all values). There was no correlation between biometric measurements and IOP before ($r = 0.016$, $p = 0.948$ for axial length and $r = -0.48$ $p = 0.075$ for anterior chamber depth) and 5 min after IRI ($r = 0.049$, $p = 0.835$ for axial length and $r = -0.219$ $p = 0.367$ for anterior chamber depth). Measurements of control group taken across same time points did not reveal statistically significant differences ($p > 0.05$, for all measurements).

Conclusion: Although IOP increases transiently after the intravitreal injection of 0.05 mL ranibizumab, axial length and anterior chamber depth are not affected by this amount of injection, and the increase in IOP after the injection seems to be irrelevant to AL and anterior chamber depth. Therefore, it is postulated that ranibizumab can be used safely in patients with age-related macular degeneration who have shallow anterior chamber and/or short axial length simultaneously.

PMID: 22737998 [PubMed - as supplied by publisher]

Other treatment & diagnosis

Invest Ophthalmol Vis Sci. 2012 Jun 22. [Epub ahead of print]

Sleeping Beauty Transposon-Mediated Transfection of Retinal and Iris Pigment Epithelial Cells.

Johnen S, Izsvak Z, Stocker M, Harmening N, Salz AK, Walter P, Thumann G.

IZKF Aachen, RWTH Aachen University, Pauwelsstrasse 30, Aachen, 52074, Germany.

Purpose: Subretinal transplantation of retinal (RPE) or iris (IPE) pigment epithelial cells has been advocated as a treatment for retinal degeneration. However, in patients with age-related macular degeneration no significant beneficial effects on vision have been shown. Since the transplanted cells did not appear to maintain a healthy avascular and neuroprotective environment, we postulate that it will be necessary to transplant cells that express elevated levels of anti-angiogenic and neuroprotective activities. Here, we provide a protocol for the efficient stable gene transfer and sustained gene expression of pigment epithelium-derived factor (PEDF), a potent anti-angiogenic and neuroprotective factor, using the non-viral Sleeping Beauty transposon system (SB100X).

Methods: Pigment epithelial cells were electroporated with a Venus reporter or a PEDF encoding plasmid, controlled by either CMV or CAGGS promoters. Transfection efficiencies and protein expression stability were evaluated by flow cytometry and immunoblotting. Gene expression profiles were analyzed by RT-PCR.

Results: SB100X-based delivery resulted in efficiencies of 100% with the Venus gene and 30% with the PEDF gene. Cell sorting enabled establishment of pure PEDF-transfected ARPE-19 populations. Transfected RPE and IPE cells have been shown to maintain stable PEDF secretion for more than 16 months and 6 months, respectively.

Conclusions: Transfection using the non-viral SB100X vector system avoids complications associated with

viral gene delivery. SB100X-mediated transfer allows for stable PEDF gene integration into the cell's genome, ensuring continuous expression and secretion of PEDF. Stable expression of the therapeutic gene is critical for the development of cell-based gene addition therapies for retinal degenerative diseases.

PMID: 22729435 [PubMed - as supplied by publisher]

BMJ Case Rep. 2012 Jun 21;2012. pii: bcr0220125942. doi: 10.1136/bcr.02.2012.5942.

Treatment of dry age-related macular degeneration with dobesilate.

Cuevas P, Outeiriño LA, Angulo J, Giménez-Gallego G.

Departamento de Investigación, IRYCIS, Hospital Universitario Ramón y Cajal, Madrid, Spain.

Abstract

The authors present anatomical and functional evidences of dry age-macular degeneration improvement, after intravitreal treatment with dobesilate. Main outcomes measures were normalisation of retinal structure and function, assessed by optical coherence tomography, fundus-monitored microperimetry, electrophysiology and visual acuity. The effect might be related to the normalisation of the outer retinal architecture.

PMID: 22729337 [PubMed - in process]

Duodecim. 2012;128(11):1140-4.

[Restoration of vision by retinal prosthesis].

[Article in Finnish]

Välimäki J.

PHKS, silmätautien klinikka.

Abstract

Retinitis pigmentosa and age-related macular degeneration destroy photoreceptor cells within the eye in the outermost layer of the retina, whereas cells of the inner layers of the retina often remain intact. Retinal prosthesis aims to replace the faded function of photoreceptor cells by means of microelectronics. The aim of the prostheses being developed is to bypass the atrophied layers of the retina and to convey visual information to the functional portion of the retina. A retinal prosthesis is not able to restore normal vision, but will make orientation easier and thus greatly facilitate the daily activities of a blind person.

PMID: 22737781 [PubMed - in process]

Harv Health Lett. 2012 May;37(7):8.

Ask the doctor. I have been diagnosed with macular degeneration and cataracts in both eyes. Could cataract surgery worsen my macular degeneration?

Heier J.

PMID: 22737742 [PubMed - in process]

Vestn Oftalmol. 2012 Jan-Feb;128(1):44-6.

[Efficacy of vision correcting system "focus" for prevention and treatment of dry form of age macular degeneration].

[Article in Russian]

[No authors listed]

Abstract

The results of comparative study of efficacy and safety of vision correcting system "Focus" and Picamilon in patients with dry form of age macular degeneration are presented. 60 patients were enrolled into the study, follow-up was 3 months. Routine examination revealed positive impact of "Focus" on dynamics of main visual functions (visual acuity and field). In terms of impact on dynamics of main visual functions "Focus" is comparable with Picamilon, though it is better tolerated. Intake of vision correcting system "Focus" promotes visual functions improvement and prevents progressing of retinal degenerations.

PMID: 22741296 [PubMed - in process]

Pathogenesis

J Ophthalmic Vis Res. 2012 May;7(1):39-44.

Anti-tumor necrosis factor alpha for retinal diseases: current knowledge and future concepts.

Mirshahi A, Hoehn R, Lorenz K, Kramann C, Baatz H.

Department of Ophthalmology, University Medical Center, Johannes Gutenberg-University Mainz, Mainz, Germany.

Abstract

Tumor necrosis factor alpha (TNF- α) is a pro-inflammatory cytokine produced by macrophages and T-cells. It plays an important role both in inflammation and apoptosis. In the eye, TNF- α appears to have a role in the pathogenesis of inflammatory, edematous, neovascular and neurodegenerative disorders. Several TNF- α -blocking drugs have been developed and approved, and are in clinical use for inflammatory diseases such as rheumatoid arthritis, psoriasis and ankylosing spondylitis. TNF- α blockers are widely used in ophthalmology as an off-label alternative to "traditional" immunosuppressive and immune-modulatory treatments in noninfectious uveitis. Preliminary studies suggest a positive effect of intravenously administered TNF- α blockers, mainly infliximab, for treating refractory diabetic macular edema and neovascular age-related macular degeneration. Unfortunately, much of the current data raises considerable safety concerns for intravitreal use of TNF- α inhibitors, in particular, intraocular inflammatory responses have been reported after intravitreal injection of infliximab. Results of dose-finding studies and humanized antibody or antibody fragments (e.g. adalimumab) are anticipated in the coming years; these will shed light on potential benefits and risks of local and systemic TNF- α blockers used for treatment of diseases of the retina and choroid.

PMID: 22737386 [PubMed - in process] PMCID: PMC3381107

Nat Commun. 2012 Jun 26;3:925. doi: 10.1038/ncomms1927.

ABCA4 is an N-retinylidene-phosphatidylethanolamine and phosphatidylethanolamine importer.

Quazi F, Lenevich S, Molday RS.

Department of Biochemistry and Molecular Biology, Centre for Macular Research, University of British Columbia, 2350 Health Sciences Mall, Vancouver, British Columbia, Canada V6T 1Z3.

Abstract

ATP-binding cassette (ABC) transporters comprise a superfamily of proteins, which actively transport a variety of compounds across cell membranes. Mammalian and most eukaryotic ABC transporters function as exporters, flipping or extruding substrates from the cytoplasmic to the extracellular or lumen side of cell membranes. Prokaryotic ABC transporters function either as exporters or importers. Here we show that ABCA4, an ABC transporter found in retinal photoreceptor cells and associated with Stargardt macular degeneration, is a novel importer that actively flips N-retinylidene-phosphatidylethanolamine from the lumen to the cytoplasmic leaflet of disc membranes, thereby facilitating the removal of potentially toxic retinoid compounds from photoreceptors. ABCA4 also actively transports phosphatidylethanolamine in the same direction. Mutations known to cause Stargardt disease decrease N-retinylidene-phosphatidylethanolamine and phosphatidylethanolamine transport activity of ABCA4. These studies provide the first direct evidence for a mammalian ABC transporter that functions as an importer and provide insight into mechanisms underlying substrate transport and the molecular basis of Stargardt disease.

PMID: 22735453 [PubMed - in process]

Genetics

Eye (Lond). 2012 Jun 29. doi: 10.1038/eye.2012.98. [Epub ahead of print]

Heritability of the spatial distribution and peak density of macular pigment: a classical twin study.

Hogg RE, Ong EL, Chamberlain M, Dirani M, Baird PN, Guymer RH, Fitzke F.

1] Centre for Vision and Vascular Science, Queen's University, Belfast, UK [2] Centre for Eye Research Australia, University of Melbourne, Royal Victorian Eye and Ear Hospital, Melbourne, Victoria, Australia.

Purpose: To elucidate the heritability of peak density and spatial width of macular pigment (MP) using a Classical Twin Study.

Methods: Fundus autofluorescence images were obtained at 488 nm from 86 subjects or 43 twin pairs (21 monozygotic (MZ) and 22 dizygotic (DZ)) (27 male, 59 female) aged from 55 to 76 years (mean 62.2±5.3 years). The relative topographic distribution of MP was measured using a grey scale of intensity (0-255 units) in a 7° eccentricity around the fovea. Relative peak MP density (rPMPD) and relative spatial distribution of MP (rSDMP) were used as the main outcome measure in the statistical analysis.

Results: A significantly higher correlation was found within MZ pairs as compared with that within DZ pairs for rPMPD, ($r=0.99$, 95% confidence interval (95% CI) 0.93 to 1.00) and 0.22, 95% CI -0.34 to 0.71), respectively, suggesting strong heritability of this trait. When rSDMP was compared, there was no significant difference between the correlations within MZ pairs ($r=0.48$, 95% CI -0.02 to 0.83) and DZ pairs ($r=0.63$, 95% CI 0.32 to 0.83), thus rSDMP is unlikely to have a considerable heritable component. In addition, there was no difference between any MP parameter when normal maculae were compared with early age-related macular degeneration (AMD) (rPMPD 0.36 vs 0.34, $t=1.18$ $P=0.243$, rSDMP 1.75 vs 1.75, $t=0.028$ $P=0.977$).

Conclusions: rPMPD is a strongly heritable trait whereas rSDMP has minimal genetic influence and a greater influence by environmental factors. The presence of macular changes associated with early AMD did not appear to influence any of these pigment parameters. Eye advance online publication, 29 June 2012; doi:10.1038/eye.2012.98.

PMID: 22744384 [PubMed - as supplied by publisher]

Diet

Aging Clin Exp Res. 2012 Jun 25. [Epub ahead of print]

Combined effects of cigarette smoking and alcohol consumption on antioxidant/oxidant balance in age-related macular degeneration.

Venza I, Visalli M, Oteri R, Teti D, Venza M.

Department of Surgical Specialities, Azienda Ospedaliera Universitaria G. Martino, Via Consolare Valeria, 1 (Gazzi) 98125, Messina, Italy. ivenza@unime.it.

Background and aims: To investigate the single and joint effects of chronic cigarette smoking and alcohol consumption on oxidative stress in age-related macular degeneration (ARMD).

Methods: Superoxide dismutase (SOD), glutathione peroxidase (GSHPx), and catalase (CAT) activities; malondialdehyde (MDA) levels; and DNA damage were measured in patients with early ARMD (n=211) and late ARMD (n=205), and control persons (n=262).

Results: When compared with healthy controls, early- and late- ARMD patients showed significant decreases in the activities of SOD and GSHPx, but not CAT, along with marked enhancements of MDA levels and tail parameters ($p < 0.01$). No notable differences were observed in the early- versus the late-ARMD group for each of the above mentioned dependent variables. Multiple regression analysis revealed that in healthy subjects chronic smoking had the strongest impact on SOD and GSHPx activities, MDA levels, and amount of DNA damage, whereas in ARMD patients, the combination of smoking and drinking habits was the greatest predictor of oxidative stress.

Conclusions: The combination of chronic cigarette smoking and alcohol consumption appears to be an aggravating factor that contribute to serious oxidative imbalance and DNA damage in ARMD. Thus, combined smoking/drinking by persons with this pathological condition should be considered harmful. Identification of factors exacerbating ARMD-associated oxidative stress can facilitate development and adoption of effective preventative measures for this disease.

PMID: 22732472 [PubMed - as supplied by publisher]

Free Radic Biol Med. 2012 Jun 22. [Epub ahead of print]

Lutein and zeaxanthin supplementation reduces photo-oxidative damage and modulates the expression of inflammation-related genes in retinal pigment epithelial cells.

Bian Q, Gao S, Zhou J, Qin J, Taylor A, Johnson EJ, Tang G, Sparrow JR, Gierhart D, Shang F.

Jean Mayer USDA Human Nutrition Research Center on Aging, Tufts University, Boston, MA 02111.

Abstract

Oxidative damage and inflammation are related to the pathogenesis of age-related macular degeneration (AMD). Epidemiologic studies suggest that insufficient dietary lutein and zeaxanthin intake or lower serum zeaxanthin levels are associated with increased risk for AMD. The objective of this work is to test the protective effects of lutein and zeaxanthin against photo-oxidative damage to retinal pigment epithelial cells (RPE) and oxidation-induced changes in expression of inflammation-related genes. To mimic lipofuscin-mediated photo-oxidation in vivo, we used ARPE-19 cells that accumulated A2E, a lipofuscin fluorophore and photosensitizer, as a model system to investigate the effects of lutein and zeaxanthin supplementation. The data show that supplementation with lutein or zeaxanthin in the medium resulted in accumulation of lutein or zeaxanthin in the RPE cells. The concentrations of lutein and zeaxanthin in the cells were 2-14-fold of that detected in the medium, indicating that ARPE-19 cells actively take up lutein or zeaxanthin. As compared with untreated cells, exposure of A2E-containing RPE to blue light resulted in a 40-60%

decrease in proteasome activity, a 50-80% decrease in expression of CFH and MCP-1, and an ~ 20-fold increase in expression of IL-8. The photo-oxidation-induced changes in expression of MCP-1, IL-8 and CFH were similar to those caused by chemical inhibition of the proteasome, suggesting that inactivation of the proteasome is involved in the photo-oxidation-induced alteration in expression of these inflammation-related genes. Incubation of the A2E-containing RPE with lutein or zeaxanthin prior to blue light exposure significantly attenuated the photo-oxidation-induced inactivation of the proteasome and photo-oxidation induced changes in expression of MCP-1, IL-8, and CFH. Together, these data indicate that lutein or zeaxanthin modulates inflammatory responses in cultured RPE in response to photo-oxidation. Protecting the proteasome from oxidative inactivation appears to be one of the mechanisms by which lutein and zeaxanthin modulate the inflammatory response. Similar mechanisms may explain salutary effects of lutein and zeaxanthin in reducing the risk for AMD.

PMID: 22732187 [PubMed - as supplied by publisher]

Invest Ophthalmol Vis Sci. 2012 Jun 28. [Epub ahead of print]

Profiles of macular pigment optical density and their changes following supplemental lutein and zeaxanthin: New results from The LUNA Study.

Zeimer M, Dietzel M, Hense HW, Heimes B, Austermann U, Pauleikhoff D.

Institute of Ophthalmology, St. Franziskus Hospital, Hohenzollernring 74, Muenster, 48145, Germany.

Purpose: Based on latest analyses disclosing an inverse association between ring-like structures in macular pigment (MP) spatial profile and age-related macular degeneration, we performed additional analyses of MP measurements obtained in participants of our earlier study (LUNA Lutein-Nutrition-effects-measured-by-Autofluorescence) to disclose if oral Lutein (L) and Zeaxanthin (Z) can attenuate, amplify or generate a ring structure.

Methods: 97 subjects attended the last follow up visit 3 months after discontinuation of a 6- month 12mg L and 1 mg Z (Ocuvite Lutein™) supplementation. Of them, 11 eyes had a secondary peak (ring-like structure), 8 an implied pericentral plateau/ shoulder on the slope of MP density profile (intermediate distribution).

Results: L and Z intake led to a general shift towards higher MP values in eyes without ring structure. Diff_MPOD, difference between mean MPOD (D.U.) at last follow up and baseline, was +0.16 at 0°. Increments at 0.25, 0.5, 1 and 2° (all $p < 0.0001$) decayed exponentially with higher eccentricity. MPOD showed comparatively slight central changes in eyes with ring and intermediate distribution (diff_MPOD at 0° +0.03 and +0.09) and increased at minimum (+0.06, $p = 0.01$) and maximum (+0.07, $p = 0.02$) of the ring and at inner (+0.07, $p = 0.04$) and outer (+0.09, $p = 0.01$) radius of the pericentral "shoulder".

Conclusions: Ring structures were neither attenuated nor generated de novo following supplementation. Individuals with second peak/implied plateau in the slope of the profile appear to have the most effective retinal stabilisation of L and Z located at a pericentral rather than the central location.

PMID: 22743321 [PubMed - as supplied by publisher]

Recent Pat CNS Drug Discov. 2012 Jun 21. [Epub ahead of print]

Curcuminoids in Neurodegenerative Diseases.

Kim DS, Kim JY, Han Y.

Core LifeSource Inc. 5100 Newport Dr. Suite # 10, Rolling Meadows, IL 60008. calebin@gmail.com or clsi.kim@gmail.com.

Abstract

Neurodegeneration is a term used to describe progressive deterioration of structure and/or function of neurons that affects different parts of the central nervous system and leads to eventual death. Neurodegenerative diseases include Alzheimers disease (AD), Parkinsons disease (PD), amyotrophic lateral sclerosis (ALS), Huntington's disease (HD), and Down's syndrome (DS), multiple sclerosis (MS), glaucoma, aging-associated macular degeneration (AMD), and diabetic encephalopathy (DE). Although the initial events that trigger these disorders may be different from each other, they share similar biochemical reactions that lead to neurodegeneration. Curcuminoids, polyphenol compounds from turmeric (*Curcuma longa*), possess diverse biological properties that modulate debilitating biochemical processes involved in AD that include attenuation of mitochondrial dysfunction-induced oxidative stress and inflammatory responses to inflammatory cytokines, COX-2, and iNOS. Curcuminoids also bind to β -amyloid (A β) plaques to inhibit amyloid accumulation and aggregation in the brain, in addition to inhibiting the toxic A β oligomer formation and oligomer-dependent A β toxicity. These properties can be further elaborated to DS, glaucoma and AMD. Curcuminoids also prevent β -synuclein aggregation in PD; attenuate ROS-induced COX-2 expression in ALS; ameliorate the symptoms of MS, DE and traumatic brain injury, in addition to neurodamages caused by heavy metal poisoning. These results demonstrate curcuminoids may be potentially effective therapeutic means to treat neurodegenerative diseases. A bulk of patents discloses methods to improve bioavailability of curcuminoids for therapeutic development. This review provides a comprehensive description on the current progress on curcuminoids against neurodegenerative diseases.

PMID: 22742420 [PubMed - as supplied by publisher]

Neurochem Int. 2012 Jun 22. [Epub ahead of print]

Differential participation of phospholipase A(2) isoforms during iron-induced retinal toxicity. Implications for age-related macular degeneration.

Rodríguez Díez G, Uranga RM, Mateos MV, Giusto NM, Salvador GA.

Instituto de Investigaciones Bioquímicas de Bahía Blanca, Universidad Nacional del Sur and Consejo Nacional de Investigaciones Científicas y Técnicas, 8000 Bahía Blanca, Argentina.

Abstract

Both elevated iron concentrations and the resulting oxidative stress condition are common signs in retinas of patients with age-related macular degeneration (AMD). The role of phospholipase A(2) (PLA(2)) during iron-induced retinal toxicity was investigated. To this end, isolated retinas were exposed to increasing Fe (2+) concentrations (25, 200 or 800 M) or to the vehicle, and lipid peroxidation levels, mitochondrial function, and the activities of cytosolic PLA(2) (cPLA(2)) and calcium-independent PLA(2) (iPLA(2)) were studied. Incubation with Fe(2+) led to a time- and concentration-dependent increase in retinal lipid peroxidation levels whereas retinal cell viability was only affected after 60 min of oxidative injury. A differential release of arachidonic acid (AA) and palmitic acid (PAL) catalyzed by cPLA(2) and iPLA(2) activities, respectively, was also observed in microsomal and cytosolic fractions obtained from retinas incubated with iron. AA release diminished as the association of cyclooxygenase-2 increased in microsomes from retinas exposed to iron. Retinal lipid peroxidation and cell viability were also analyzed in the presence of cPLA(2) inhibitor, arachidonoyl trifluoromethyl ketone (ATK), and in the presence of iPLA(2) inhibitor, bromoenol lactone (BEL). ATK decreased lipid peroxidation levels and also ERK1/2 activation without affecting cell viability. BEL showed the opposite effect on lipid peroxidation. Our results demonstrate that iPLA(2) and cPLA(2) are differentially regulated and that they selectively participate in retinal signaling in an experimental model resembling AMD.

PMID: 22732705 [PubMed - as supplied by publisher]

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