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1	Suppressive E ect of Arctium lappa L. Leaves on Retinal Damage against A2E-Induced ARPE-19 Cells and Mice	Arctium lappa L. leaves; age-related macular degeneration; A2E accumulation; A2E-induced cell death; apoptosis	extract of ALleaves (ALE)	ARPE-19 cells / By A2EBALB/c mice / By white light	- Cell viability - Relative of A2E level - Cell apotosis - H&E staining - Stained region in ONL layer
2	Effect of Photooxidation of A2E, a Lipofuscin in the Retina, induced by Smartphone Light Against the Photooxidation by Blue Light Blocking Lenses	Age-related macular degeneration (AMD), Lipofuscin in retina, A2E and iso-A2E, Blue light blocking tinted lens, Blue light blocking coated lens	스마트 폰 빛 조사	스마트폰에서 발생하는 빛 조사 전후의 형광색소 물질의 양 & 다양한 청광 차단 안경렌즈를 사용하였을 때 차이를 형광색소 물질의 흡광도를 통하여 확인	- 스마트폰으로 유발되는 A2E와 iso-A2E의 광산화 효과 - A2E와 iso-A2E의 항광 산화에 미치는 청광 차단 렌즈의 효과 - 시간에 따른 청광 차단 렌즈의 항광 산화 효과
3	Macular Pigment Optical Density and Photoreceptor Outer Segment Length as Predisease Biomarkers for Age-Related Macular Degeneration	macular pigment; photoreceptor; age-related macular degeneration; retina; medical checkup; biomarker	Not applicable	Thirty AMD fellow eyes of 30 late AMD patients (22 men; mean age, 68.2 1.8 years; range 50–5 years) and 30 eyes of control patients	- Macular pigment optical density (MPOD) and photoreceptor outer segment (PROS) length - Correlation between macular pigment optical density (MPOD) and photoreceptor outer segment (PROS) length - Scatter diagram of macular pigment optical density(MPOD) and photoreceptor outer segment (PROS) length - Representative optical coherence tomography (OCT) images of control and age-related macular degeneration (AMD)-fellow eyes
4	Positive Association between Macular Pigment Optical Density and Glomerular Filtration Rate: A Cross-Sectional Study	macular pigment optical density; estimated glomerular filtration rate; age-related macular degeneration	Not applicable	137 patients aged 60 years or older were diagnosed with grade 2 or higher-grade nuclear opacifications based on the Lens Opacities Classification System III	- Study design flow diagram - Simple linear analysis between MPOD and eGFR
5	Protective effects of Vaccinium Uliginosum L. fractions and its compounds on dry age-related macular degeneration	Vaccinium uliginosum L., age-related macular degeneration(AMD), A2E, blue light exposure, HP20 resin	Vaccinium uliginosum L. (V.U)	ARPE-19 cells / By blue lightBALB/c mice / By blue light	- Representative HPLC chromatogram (330 nm) of fruit extract of Vaccinium uliginosum L. and UV spectra - V.U extract (VE) and 70% EtOH (FE) and fraction of HP20 resin (FH) on A2E oxidation and A2E-laden ARPE-19 cell death from blue light induced damage - Effect of V.U single compound on A2E-oxidation and A2E-laden ARPE-19 cell death from blue light induced damage - ONL thickness & Nuclei of ONL
6	Prunella vulgaris var. L extract protects blue light induced RPE cell death in vitro and in vivo	Prunella vulgaris var. L, age-related macular degeneration (AMD), A2E, blue light exposure, oxidative stress, inflammation	Prunella vulagris (P.V) extract	ARPE-19 cells / By blue lightBALB/c mice (5weeks) / By blue light	- Inhibitory effect of P.V extract on A2E oxidation in cell free system from BL - cell viability - P.V extract inhibits A2E accumulation - P.V extract inhibits BL induced apoptosis in ARPE-19 cells - P.V extract activates Nrf-2/HO-1 signaling pathway and inhibits BL induced inflammation in ARPE-19 cells - HNE staining, thickness, protein expression(NF-kB p65 and IkB alpha), mRNA expression(TNF-alpha, MCP-1, MMP-2, MMP-9, VEGF-alpha, IL-1beta and IL-6)

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7	들쭉 추출물의 노인성 황반변성증에 관한 예방효과 A2E 축적된 ARPE-19 세포와 C57BL/6 mice의 망막에서 광 손상에 대한 들쭉 추출물의 보호 효능	Age-related macular degeneration (AMD), Vaccinium uliginosum L., A2E, ARPE-19 cells, Blue light	Vaccinium uligisosum L.	ARPE-19 cells / By UV AC57BL/6 Male, mice (11months) / By blue light	- antioxidant effect of V.U - cell viability - Inhibitory effects of A2E accumulation in V.U extract - H&E staining - Nuclei of ONL per 100um, Thickness of ONL - Transmission electron microscopic analysis of lipofuscin
8	레스베라트롤 및 그 유도체를 이용한 노인성 황반변성증에 대한 보호 효과	Age-related macular degeneration (AMD) Resveratrol, AntioxidantAnti-inflammatory, Retinal pigment epithelium	레스베라트롤 및 레스베라트롤 배당체	ARPE-19 cells / By 청색광 (430nm)	- cell viability - Inhibitory action of RES and PIC against A2E photooxidation - Protective effect of RES and PIC against A2E accumulation induced damage on ARPE-19 cells - Protective effects of RES and its glycones against blue light induced photodamage on ARPE-19 cells
9	Protective effects of Panax ginseng berry extract on blue light-induced retinal damage in ARPE-19 cells and mouse retina	Panax ginseng berry Age-related macular degeneration Blue light exposure A2E ARPE-19 cells	ginseng berry extract (GBE)	ARPE-19 cells / By blue light (430nm) Balb/c mice (5weeks) / Blue light (430nm)	- GBE inhibits cell death induced by A2E treatment and blue light exposure in ARPE-19 cells - GBE activates SIRT1/PGC-1a signaling pathway and inhibits BL induced inflammatory response in A2E-laden ARPE-19 cells - GBE inhibits apoptosis and restores the inhibition of autophagic flux induced by BL exposure in A2E-laden ARPE-19 cells - GBE protects BL induced retinal degeneration in retina (ONL Thickness) - GBE activates SIRT1/PGC-1a signaling pathway and inhibits BL induced inflammatory response in retina (gene expression(SIRT1, PGC-1a, TNF-a, IL-1b) western blot(SIRT1, PGC-1a, NF-kB, Lamin B1)
10	Protective Effects of Spirulina maxima against Blue Light-Induced Retinal Damages in A2E-Laden ARPE-19 Cells and Balb/c Mice	Spirulina maxima; age-related macular degeneration; A2E; blue light; inflammation; oxidative stress	Spirulina maxima (S. maxima)	ARPE-19 cells / By blue light (430nm) Balb/c mice (5weeks) / Blue light (430nm)	- S.maxima inhibited celldeath caused by A2E treatment and BLexposure - S.maxima regulated the inflammatory response caused by BL in A2E-laden ARPE-19 cells (western blot: NF-kb, Lamin B, iKb-b) - S.maximaRegulatedtheApoptosisCausedbyBLinA2E-LadenARPE-19Cells (PARP, caspase 3) - S. maxima protected photoreceptor degeneration caused by BL in retina (H&E staining, ONL Thickness) - S. maxima regulated the inflammation and apoptosis caused by BL in retina (TNF-, CXCL-2, MCP-1, MMP-2, MMP-9, VEGF-A, IL-1 , and IL-6)
11	Long-term blue light exposure impairs mitochondrial dynamics in the retina in light-induced retinal degeneration in vivo and in vitro	Dry age-related macular degeneration RPE cells Blue light Oxidative stress Mitochondrial dynamics	Not applicable	C57BL/6 mice (6month) / blue light (800lx)	- Effects of long-term blue light exposure on the retina in C57BL/6 mice (HE staining, Thickness, TUNEL) - Alterations in mitochondrial structure and dynamics-related markers in mice exposed to blue light (DRP1, OPA1, OMA1) - Cytotoxicity Induced by Blue Light in ARPE-19 Cells (cell viability) - ROS Generation in ARPE-19 Cells Exposed to Blue Light - Mitochondrial dynamics were destroyed by blue light in ARPE-19 cells (OPA1, Bcl-2, BAX)

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12	초기 황반변성 환자에서 들쭉 추출물의 효과	Age-related macular degeneration (AMD), Vaccinium uliginosum L., A2E (N-retinyl-N-retinylidene ethanolamine) ARPE-19 cells, Blue light	들쭉나무 (Vaccinium uliginosum)	초기 황반변성은 AREDS 그룹의 분류에 의한 early AMD(AREDS category 2) & intermediated AMD (AREDS category 3)에 해당하는 환자	- Retinal thickness between RPE and IS/OS junction was measured at the foveal RPE and IS/OS thickness and foveal thicknss - Survey questions of subjective symptoms - Analysis of the rate of change in study group and control group
13	In Vivo Multimodal Imaging of Drusenoid Lesions in Rhesus Macaques	Drusenoid lesions, Rhesus macaques, Age-related macular degeneration (AMD) Multimodal imaging, Spectral domain optical coherence tomography (SD-OCT)	Not applicable	rhesus macaques (Macaca mulatta) (>19years)	- Grading and quantification of drusenoid lesions in rhesus macaques from fundus photographs - Multimodal imaging of soft drusen in rhesus macaques - Multimodal imaging of hard punctate lesions in rhesus macaques - Image segmentation and thickness measurement of retinal and choroidal layers in rhesus macaques
14	Drusen, choroidal neovascularization, and retinal pigment epithelium dysfunction in SOD1-deficient mice: A model of age-related macular degeneration	animal model; superoxide dismutase	Not applicable	Sod1 -/- C57BL/6 mice / By light	- Senescent Sod1 -/- mice showing drusen - Degenerated RPE and thickened Bruch's membrane in Sod1 -/- mice - CNVs in Sod1 / mice - Expression of SOD1, SOD2, and SOD3 in the eyes of Sod1 -/- mice - Oxidatively damaged RPE and its disrupted b-catenin-mediated integrity in Sod1 -/- mice
15	REV-ERBα regulates age-related and oxidative stress-induced degeneration in retinal pigment epithelium via NRF2	Retinal pigment epithelium Aging Age-related macular degeneration REV-ERBα Oxidative damage NRF2	SR9009	WT and Rev-erbα -/- mice (12month)	- REV-ERBα declines in aging RPE and sub-retinal deposits increase in Rev-erbα -/- mice - RPE degeneration in Rev-erbα -/- eyes (BrM thickness) - REV-ERBα deficiency decreases RPE phagocytic activity - Rev-erbα -/- eyes are more sensitive to chemical-induced oxidative stress injury - REV-ERBα agonist protects against chemical (NaIO3)-induced RPE damage - REV-ERB α regulates NRF2(Nfe2l2) transcription and the expression of its downstream target antioxidant genes in RPE cells - RPE-specific knockout of REV-ERBα in mice shows similar ocular pathologies as Rev-erbα -/- mice
16	Retinal pigment epithelium-specific CLIC4 mutant is a mouse model of dry age-related macular degeneration	Age-related macular degeneration (AMD), Retinal pigment epithelium (RPE), CLIC4 (Chloride intracellular channel 4) Drusen, Lipid metabolism	Not applicable	C57BL/6 J mice (Clic4 f/f mice16 and Best1-Cre+/−mice)	- RPEΔClic4 mice developed age-related vision loss - RPEΔClic4 mice progressively develop histopathological features resembling intermediate and advanced AMD - Young RPEΔClic4 mice had altered epithelial cell features and increased RPE dropout - CLIC4 deficiency causes transcriptomic reprograming and pathway changes in RPE cells - RPEΔClic4 mice have aberrant and age-related lipids, lipoproteins, and protein depositions at sub-RPE/BrM - RPE lipid transport, BrM lipid deposition & disease summary for RPEΔClic4 mice

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17	Relationship Between Drusen Height and OCT Biomarkers of Atrophy in Non-Neovascular AMD	AMD, atrophy, OCT, druse, drusen	Not applicable	155 patients with drusen associated with intermediate AMD	- Drusen Characteristics Across All Eyes - Optical coherence tomography (OCT) B-scans from seven separate cases and one control case of macular drusen - Frequency and Location of OCT Biomarkers of Atrophy Within the Same Eye - Relationship Between Height and Diameter of Drusen
18	Drusen Volume as a Predictor of Disease Progression in Patients With Late Age-Related Macular Degeneration in the Fellow Eye	macular degeneration, geographic atrophy, wet macular degeneration, retinal drusen, choroidal neovascularization, optical coherence tomography, drusen volume	Not applicable	89 patients who had neovascular AMD in only one eye	- baseline drusen volumes for eyes that developed late AMD at 1 year - baseline drusen volumes for eyes that developed late AMD at 2 year - Central OCT scans of a fellow eye at baseline, month 12, and month 24 of follow-up
19	Drusen volume development over time and its relevance to the course of age-related macular degeneration	Age-related macular degeneration (AMD) Drusen volume, Optical coherence tomography (OCT)Disease progression, Retina	Not applicable	109 patients presenting early and intermediate age-related macular degeneration (AMD)	- Calculating the drusen volume growth model - Bland–ltman plot showing the agreement between the drusen volume measurements - Development of drusen volume of all eyes during study period
20	Association of Visual Function Measures with Drusen Volume in Early Stages of Age-Related Macular Degeneration	Automatic segmentation of drusen, drusen volume, age-related macular degeneration, contrast sensitivity	Not applicable	A total of 100 eyes (16 eyes with early AMD, 62 eyes with intermediate AMD, and 22 eyes from healthy controls)	- Sociodemographic and Clinical Characteristics of the Participants - Relationship Between Drusen Volume and Visual Function Tests
21	Observational Study in Drusen Patients with Epiretinal Membrane after Vitrectomy and Membrane Peeling	Central foveal thickness, Drusen, Drusen size, Epiretinal membrance, Vitrectomy	Not applicable	드루젠과 함께 황반전막이 있는 환자 20안과 드루젠이 없는 황반전막이 있는 환자 25안	- Baseline characteristics - Pattern of BCVA (logMAR) at preoperative and in the postoperative period, in both subgroups - Mean change of central foveal thickness
22	Extramacular Drusen and Progression of Age-related Macular Degeneration (AMD); Age-related Eye Disease Study 2 Report 30	Age-related macular degeneration (AMD) Extramacular drusen Disease progression, Age-Related Eye Disease Study 2 (AREDS2) Geographic atrophy	Not applicable	4168 eyes (2998 participants) with intermediate AMD in one or both eyes	- Field 2 macula centered fundus photograph with macular grid overlay - Extramacular drusen were not associated with risk of progression to late AMD - Characteristics of Extramacular Drusen

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23	건강검진 자료를 이용한 나이관련황반변성의 위험인자 분석	Age-related macular degeneration, Check-up, Fundus photography, Risk factor	Not applicable	104 patients with early-phase, 75 patients with intermediate-phase, and 4 patients with late-phase AMD	- Comparison of baseline characteristics between 4 groups with normal, early AMD, intermediate AMD, late AMD - Comparison of average values between normal and AMD groups after propensity score matching for age and sex - Logistic regression analysis of factors which showed meaningful relationships with AMD
24	Are macular drusen in midlife a marker of accelerated biological ageing?	Macular drusen, Leukocyte telomere length, DNA methylation age acceleration, Epigenetic clock, Retinal vessel caliber	Not applicable	1037 participants	- Fundus photographs showing macular drusen (right eye) and without drusen (left eye) - Pace of ageing of participants with drusen (N = 165) and without drusen (N = 669) - Pace of ageing of participants with no drusen (N = 669), with drusen in one eye (N = 61), and with drusen in both eyes (N = 104)
25	스펙트럼 영역 빛간섭단층촬영 결과에 영향을 주는 다양한 인자 분석	스펙트럼 영역 빛간섭단층촬영 (Spectral domain optical coherence tomography, SD-OCT) 황반 두께 (Macular thickness) 망막신경섬유층 두께 (Retinal nerve fiber layer thickness)	Not applicable	최대 교정시력 0.6 이상이며, 세극등 검사와 안전 검사상 이상이 없는 196명	- Baseline characteristics of subjects - ETDRS subfields within standard 1-, 3-, and 6-mm-diameter concentric circles at the right used for reporting retinal thickness - Macular subfield thicknesses and retinal nerve fiber layer thicknesses stratified by sex - Macular subfield thicknesses and retinal nerve fiber layer thicknesses stratified by laterality - Correlations between OCT measurements and age, spherical equivalent, and signal strength
26	Evaluation of retinal pigment epithelium changes in serous pigment epithelial detachment in age-elated macular degeneration	Age-related macular degeneration (AMD) Retinal pigment epithelium (RPE) Pigment epithelial detachment (PED) Multi-contrast optical coherence tomography RPE-melanin OCT	Not applicable	26 eyes of 21 Japanese patients with serous PEDs due to AMD (13 men, 8 women; age range, 55–3 years; mean age, 72.1 years)	- Multimodal imaging of serous PED in the right eye of a 78-year-old man - Multimodal imaging of serous PED in the right eye of a 70-year-old man - Scatterplots of RPE70 areas or area ratios and morphometric PED parameters with statistically significant correlations
27	Natural History of Drusenoid Pigment Epithelial Detachment in Age-Related Macular Degeneration: AREDS Report Number 28	Age-related macular degeneration (AMD) Drusenoid pigment epithelial detachment (DPED) Natural history Age-Related Eye Disease Study (AREDS)Disease progression	Not applicable	4757 participants enrolled in the Age-Related Eye Disease Study (AREDS), 255 were identified as having DPED in at least one eye and having 5 or more years of follow-up after the initial detection of the DPED	- Progression of study eyes with drusenoid pigment epithelial detachments (DPED) to advanced forms of age-related macular degeneration (AMD) - Natural history of fundus changes in eyes with drusenoid pigment epithelial detachments (DPEDs) not progressing to advanced forms of age-related macular degeneration (AMD) by 5 years (n = 163) - Fundus changes occurring in the left eye of a 73 year-old woman with a drusenoid pigment epithelial detachment (DPED) at baseline - Change in best corrected visual acuity over time in eyes with drusenoid pigment epithelial detachments (DPED)

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28	Activated Retinal Pigment Epithelium, an Optical Coherence Tomography Biomarker for Progression in Age-Related Macular Degeneration	retinal pigment epithelium, age-related macular degeneration, optical coherence tomography, drusen, hyperreflective foci, transdifferentiation, apoptosis, migration, Mie scattering, electron microscopy, stereology	Not applicable	142 maculas (53 advanced AMD, 13 GA eyes from 12 donors and 40 neovascular AMD eyes from 40 donors; 29 early AMD; 60 age-matched control eyes)	- Fifteen phenotypes of retinal pigment epithelial cell morphology in advanced age-related macular degeneration - Retinal pigment epithelium phenotypes in spectral-domain optical coherence tomography - Progression of RPE phenotypes in the transition to geographic atrophy - Correlations between ex vivo SDOCT and high-resolution histology in drusenoid pigment epithelium detachment - Histologically defined RPE features are visible in vivo - RPE morphology and the life cycle of drusenoid pigment epithelial detachment (DPED)
29	Therapeutic Efficacy of a Novel Acetylated Tetrapeptide in Animal Models of Age-Related Macular Degeneration	acetylated tetrapeptide (Ac-RLYE); neovascular age-related macular degeneration; resis tance; retinal neovascularization; laser-induced CNV model; VEGF; VEGFR-2	Not applicable	Six-week-old male C57BL/6J mice / By 532nm	- The effects of the intravitreal administration of RLYE, the modified RLYE variants [R(D)LYE and Ac-RLYE], and aflibercept on the area of choroidal neovascularization (CNV) in laser-induced CNV mouse models - The effects of the intravitreal administration of RLYE and Ac-RLYE on inhibition of retinal vascular leakage in streptozotocin (STZ) induced diabetic mouse models - The effects of the intravitreal administration of Ac-RLYE and aflibercept on inhibition of choroidal neovascularization (CNV) rat models - The effects of the intravitreal administration of Ac-RLYE and ranibizumab on inhibition of choroidal neovascularization (CNV) in laser-induced CNV rabbit models - The effects of the intravitreal administration of Ac-RLYE and ranibizumab on inhibition of choroidal neovascularization (CNV) in laser-induced CNV minipig models - The effects of the intravitreal administration of Ac-RLYE, ranibizumab, and aflibercept on inhibition of choroidal neovascularization (CNV) in laser-induced CNV rabbit models
30	Wnt5a/β-catenin-mediated epithelial-mesenchymal transition: a key driver of subretinal fibrosis in neovascular age-related macular degeneration	Neovascular age-elated macular degeneration, Subretinal fibrosis, Retinal pigment epithelium, Epithelial mesenchymal transition, Wnt5a/β-atenin	FH535 (a β-atenin inhibitor) Box5 (a Wnt5a inhibitor)	ARPE-19 cells7-week-old male C57BL/6J mice / By 532nm	- Safety assessment of intravitreal administration of FH535 in C57 mice - The effects of FH535 on subretinal fibrosis, EMT and CNV in laser-nduced CNV mice - The impact of intravitreal administration of FH535 or Box5 on Wnt-ignaling, EMT and subretinal fibrosis in laser-nduced CNV mice - The influence of TGFβ1 on the Wnt-ignaling molecules in ARPE-9 cells - The impact of FH535 co-ncubation on the EMT and migratory capacity of ARPE-9 cells treated with TGFβ1 - The impact of Box5 (a Wnt5a antagonist) on the expression profiles of EMT-and Wnt signaling-elated molecules, as well as its influence on the migratory capacity in TGFβ1-reated ARPE-9 cells