



The effect of bilberry nutritional supplementation on night visual acuity and contrast sensitivity

licine Review (2000) 5(2):164-173

Purpose: Investigation on the effects of bilberry on night visual acuity (VA) and night contrast sensitivity (CS).

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- Iethods: Double-blind, Jakeebo-controlled, crossover design using male subjects (25-47 years) with BCVA ≥ 20/20 8 received Jakeebo and 7 received active capsules for 3 weeks. Active capsules contained 1601 ong of blibery extract (25% anthocyanosides) Subjects ingested one active or placebo capsule three times daily for 21 days. After the time-week trauternet proci al month washout period was employed to allow any effect of biblery on might wision to disspate, in the second 3 week reamment period, the 8 subjects who first received placebo were given active capsiles and the '41 hind first received active capsiles who first received placebo were given active capsiles and the '41 hind first received active capsiles were given
- placebo. Night VA and night CS was tested throughout the 3-month experiment.

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Methode obtained from the US National Health and Nutrition Examination Surveys from 2005 to 2008, with linked hrough 2015. Severity of retinopathy was defined as no retinopathy, mild nonproliferative retinopathy derate-severe NPR, and proliferative retinopathy.

Of 5.54 rticipants aged ≥18 years with gradable retinal 96 had retinopathy, 289 had stroke, and 597 had Mean age of subjects was 56.3 \pm 11.7 years. ated with higher risk o











































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Impaired Dark Adaptation Associated with a Diseased Bruch's Membrane in Pseudoxanthoma Elasticum Reting (2020) 40:1988–1995	Comparison Of The AdaptDx And Goldmann- Weekers Dark Adaptometers (OVS (2011) 52: 5737 AdaptDx is equivalent to the performance of the Goldmann-Weekers Adaptometer and the rod-core break and rod intercept parameters provide equivalent estimates of DA speed						
Methods In this prospective case-control study, DA thresholds were measured using a Goldmann-Weekers dark adaptometer.							
Results DA thresholds were significantly higher and adaptation	Reduced Vit A intake	Impaired Vit A absorption	Reduced Vit A storage				
periods were prolonged in pseudoxanthoma elasticum compared with controls. Two patients were treated with high-dose Vit A which partially reversed impaired dark adaptation.	 Inadequate food supply Chronic alcoholism Higbly selective disting Dysphagia Mentol (lines) 	Crohn's disease Celiac disease Pancreatic insufficiency Short bowel syndrome Chronic diarrhea Inflammatory bowel disease Upper gistrointestinal	*Liver disease *Cystic fibrosis				
Positive effects of vit A supplementation may inacate restricted retinal access of Vit A through Bruch's membrane as possible underlying pathogenic factor	-wertai lines	surgery •Giardiasis •Abetalipoproteinemia					





nclusion = DR assessment protocol in RETeval device was effective in screening and ferentiating DR (mild NPDR, moderate NPDR, severe NPDR, PDR) and VTDR in patients with hortor

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Subclinical Imaging of Neurodegenerative Disorders Disorders • Multiple Sclerosis • Parkinson's Disease • Dementia with Lewy Bodies • Frontotemporal dementia • Alzheimer's Disease and the states I TYY







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Sub-Clinical Testing Tear Film Analysis – Dry Eye Disea Sensitivity and specificity of POC MMP-9 immunoassay for diagnosing inflammation related to dry eye

nctions ving as controls mis or for a d vice i

d sensitivity of 85%, value of 73% and posi on d with clinical assessment, InflammaDry is sensitive ific in diagnosing dry eye. Evaluation of Lipid Layer Thickness Measurement of the Tear Film as a Diagnostic Tool for Meibomian Gland Dysfunction

analysis of 199 eyes using subjective symp ible Meibomian plands and LipiView were

Results For a cut-off value of ± 75 -nm LLT, we found a sensitivity of 65.8% and a specificity of 63.4% for the detection of an MGE For a cut-off value of ± 60 , the sensitivity was 47.9%, and

tive correlation between the LLT and expressible an glands found in this study suggests a higher by of MGD in patients with a low LLT. This autom nt of the LLT might be a suitable screening text

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Sub-Clinical Testing Tear Film Analysis – Dry Eye	Disease					
Lactoferrin levels can diagnose dry eye disease Optometry Times Journal (2020)12(6)	New Freeware for Image Analysis of Lissamine Green Conjunctival Staining Cornea (2021) 40(3), 351-357.					
Lactoferrin test sensitivity is 83% and the IgE microassay test sensitivity is 93%. The combined specificity for both tests is 97%	Methods Twenty DES patients with visible LG conjunctival staining were selected. The images were taken with a white light source and a red filter transmitting over the wavelengths absorbed by LG. Stained areas were then detected using a Lapkace of Gaussian filter and applying a manual threshold LG-takined areas were also drawn manually by 2 experts as a reference.					
	Results: The algorithm closely matched the actual contours of the punctate dots. In 19 of 20 case, the algorithm found the same Oxford grade as the experts, even for confluent stanning that was detected as a multitude of dots by the algorithm but not by the experts, resulting in a high overestimation of the total number of dots without Oxford grade mismatch					
	Results Image-analysis algorithm yields results consistent with subjective grading and may offer advantages of automation and scalability in clinical trials.					



Subclinical Testing Tear Film Analysis – Sjogren's syndrome

Early detection of Sjogren's syndrome: sensitivity and specificity of the Sjo Diagnostic Test

Methods Antibodies to the traditional markers (SSA [Ro], SSB [La], ANA and RF and the novel biomarkers (salivary protein-1 [SP1], carbonic antlydrase-6 (ZA6) and parcid secretory protein (PSP) in patient sera samples were detected using the 50 panel. To assess specificity, sera samples from 27c onfirmed S5 patients across 3 clinical studies were analyzed with 50. To assess specificity, sera samples from 125 age- and sev-matched controls, as well as 64 pediatric controls, were analyzed with 50.

Results

Overall, the cumulative sensitivity of the complete 5/8 panel was 91.4% while sensitivity of SSA/SSB alone was 74.9%. The cumulative specificity for the complete 5/8 panel was 79.6% and the cumulative specificity for the novel biomakers was 63.5%.

ions anel incorporates traditional and novel markers and increases the sensitivity in the diagnosis of SS by 6 without compromising specificity. Patients who may have SS would benefit from screening with the 5j0 I aclitate early diagnosis and comtribute to better management of dry eye symptoms and other systemic

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Subclinical Testing Tear Film Analysis – Parkinson's dis

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Biomarkers for Parkinson's Disease with Reflex Tears Stratified by Disease

Duration 2022 AAN Annual Meeting; Abstract \$16.002

Methods Refer tears were collected from 77 male and female early (disease duration 0-4 years), 43 intermediate (5-8 years), and 50 late (greater than 9 years) PO patients and 67 male and female HC using an unanesthetized Schirmer's test. Samples were pooled from both eyes for analysis of oligomeric alpha-synuclein.

K85005 Oligomeric Japha-synuclein was significantly increased by 5.4% in tears of early PD patients (4.28 ± 0.75 ng/mg tear protein, p-value <0.001), 4.0% in tears of intermediate PD (3.23 ± 0.54 ng/mg, p<0.001) and 3.1% in tears of tate PD (2.44 ± 0.40 ng/mg, p<0.001) relative to HC (0.80 ± 0.24 ng/mg). No significant sex differences were present.

Conclusions Oligomeric synutclein levels in tear fluid does not enable discrimination between various stages of PD patients based on disease duration compared to HC. The current study validates previous findings that oligomeric algal synutclein levels are: increased in reflex tears of PD patients compared to controls and suggest that elevelt in adjagneric algaha-synucklein are stable across patients with early stage, intermediate and late stage PD





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events over 5 years, measured blood pressure and verified use	All a long and a long and a long and a long and a	111410			0.7507.004.004	0.05
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high (SRP >140 mm Hg or DRP >90 mm Hg) and pormal (SRP	Alore o in condition in other drop sents	520004	558	_	1.00(0/29-1.27)	0.21
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5728 dementia cases and 1741 AD diagnoses across conorts of	Kone (mother dog earry)	5 (542)	49 9		18(0):180	645
7-22 years were analyzed. Those using any AHM had reduced	oueso		-	-		
rick for developing dementia (MP: 0.89) and AD (MP: 0.84)	first in a data and	5100050			0.000 0.000 0.000	20
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compared with those not using AHM.	Service she has servi	CICIED .	65		LOUGHANKS	005
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nterpretation	Alone or in conduction (including share)	5 (12 8)(5)	1000	•	*###/3*50	0.84
interpretation	1-375-#-42-046-F-695					
Among people with hypertension, use of any AHM with			22 67	20 14 24		
afficacy to lower blood pressure may reduce the rick for						





What's now in subclinical diagnosis?

- 1. Serum-based and retinal-based biomarker testing
- Patient-tailored health plans for at-risk populations
 Integrated systemic / supplementation strategies / enhanced bioavailability
- 3. Impaired dark adaptation is early manifestation of retinal dysfunction
- 4. Impaired full-field flash ERG is early manifestation of retinal
- 4. Risk calculator incorporate:
 Clinical biomarkers + Genetic risk + Systemic risk factors
- Healthy skepticism with reasoned cynicism

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What's now in subclinical diagnostics?









What's next in subclinical diagnostics?



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What's next in subclinical treatment?

 Exposure to low-intensity visible light to NIR (500 nm to 1000 nm) allows for high tissue penetration and offers a non-invasive approach for the treatment of early AMD Enhances the activity of mitchondrial cytochrome C oxidase and production of ATP in the retina leading to a reduction of free radical production and oxidative damage Reduces gene expression of retinal stress and inflammatory markers in the outer retina



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What's next in subclinical treatment?

n e270-e277

TDRS BCVA score improved by 5.9 letters (p < 0.001) stely post-treatment that remained at a statistically nt level at visit 2 (p < 0.001)

CS was significantly improved at 1.5 (p = 0.01), 3.0 (p = 0.02) and 6.0 CPD (p = 0.003) at visit 1 immediately post-treatment

antly reduced (p = 0.02) at visit 2

ignificant changes in central retinal thickness or graphic atrophy area or retinal volume during the ervational period.

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Photobiomodulation reduces drusen volume and improves visual acuity and contrast sensitivity in dry age-related macular degenergation. Primary outcome measures • BCVA using a logMAR chart at 12 months follow-up.

Trial SEX None improved by 35 Verter (p < 0.001)
 Secondary cations measures
 int loval at or 1 p < 0.001
 at order at 1 p < 0.0

Takeaways... Reduction in retinopathy correlates with reduced risk of stroke, dementia and mortality Early identification of retinopathy is currently available in primary care clinical settings
 Multi-modal Retinal Photography
 Optical Coherence Tomography ± Angiography
 Full-Field ERG Dark Adaptometry Published literature strongly supports mitigation of systemic disease and related retinopathy using established nutraceuticals Carotenoids
 Omega-3 Fatty Acids Polyr Mitigation of systemic microvascular insults, inflammation and oxidative stress have direct benefits in retinal health and function rly modest changes in pathophysiology conveys significant long-term benefits in function





https://www.cochrane.org/evidence

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