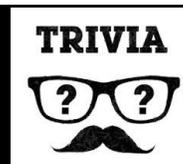


Ocular Nutrition Controversies

Jeffrey D. Gerson, O.D., F.A.A.O.

Some nutritional trivia



- What is the leading source of antioxidants in the average American's Diet?
 - Coffee
- Approximately what % of vege intake is french fries?
 - 25% (And up to 1/3 of Americans consume fast food on a daily basis!)
- What is the average consumption of L/Z by the average American
 - <2mg/day
- What percentage of Americans don't smoke, aren't overweight, exercise and eat at least 5/d of f/v?
 - 3%

Multi-vitamins

- Are multivitamins worthwhile?
- Are they just a fairy-dust formulation?
- Are they true to label?
 - NY AG investigation of major retailers
- Frame of reference as to AREDS2...



“True to label”

- You can't take for granted that things are what they say..
- NYT article in Nov. 2013 looking at 44 bottles from 12 companies of supplements
 - Bottles from 2 companies had 100% and 2 had 0% accuracy to label
 - 2 bottles of St John's wort contained NONE of the actual herb
 - 1/3 showed substitution (no trace of advertised)

NY Attorney's General gets involved

- In Feb 2015 NYAG did sting with GNC, Target, Walgreens and Walmart
 - Ex: Walgreens Ginseng was only powdered garlic and rice
 - Walmart Ginko biloba was radish, houseplants and wheat (Despite being labeled gluten/wheat free)
 - 3/6 tested at Target had 0% of labeled claim
 - GNC: unlisted ingredients including legumes as fillers

So...

- Use only brands you can trust
- PRESCRIBE to your patient as you would anything else
- Look for independent lab testing, production in NSF, follow BMP (best manufacturing practices) facilities and a company that will be there when you need them!

MPOD

- Does MPOD only relate to AMD risk?
- Are carotenoids important beyond AMD?

Remember what I said earlier about how to easily discuss with patients?

Can we improve visual function

- ZVF, LAST, LAST2
 - What do we mean by visual function?



Dietary Supplements Improve Macular Pigment and Visual Function

(Dr. John Herman, Kleiner Goudy, Davis: Advances in Ophthalmology & Visual Systems, January 2017) **521 patients**

Mean MPOD increased 82.6% across the group at 24 months with EyePromise Restore supplementation

88.3% of patients achieved an MPOD increase of at least 30%

The QuantifEye MPOD instrument provided accurate and repeatable test results

Initial MPOD Reading	6m MPOD Mean Increase	12m Mean Increase	18m Mean Increase	24m Mean Increase
<.20	171%	297%	421%	502%
.21-.30	91.2%	131.4%	166.6%	191.2%
.31-.40	29.2%	56.1%	72.6%	84.2%
.41-.50	9.4%	13.2%	31.1%	49.3%
Over .50	6.7%	11.9%	21.2%	20.4%

MPOD Testing Repeatability

Macular Pigment Optical Density: Repeatability, intereye correlation, and effect of ocular dominance
Pinakin Gunvant Davey, et. al., College of Optometry, Western University of Health Sciences (Clinical Ophthalmology, August, 2016)

- 72 test subjects
- MPOD measurements obtained using the QuantifEye show good short-term repeatability.
- There is excellent intereye correlation, indicating that the MPOD values of one eye data can predict the fellow eye value with 89% accuracy.
- Ocular dominance had no bearing on the outcome of this psychophysical test in ocular healthy eyes.

Dietary Supplements Improve Macular Pigment and Visual Function

(Herman, Kleiner Goudy, Davis: *Advances in Ophthalmology & Visual Systems*, January 2017) **521 patients**

“Two welcomed significant findings in this study were somewhat unanticipated at the outset”

- “First 62-68% of patients showed an improvement in visual function related to glare recovery and contrast sensitivity”
- “The second was the improvement in hard and soft drusen in the posterior pole associated with improving MPOD scores throughout the study. Eyes with notable hard drusen showed the greatest improvement with OCT evaluation.”

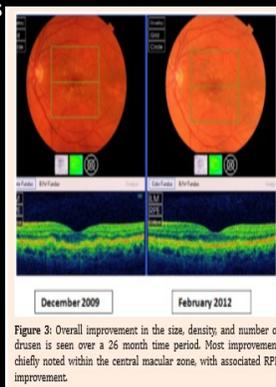


Figure 3: Overall improvement in the size, density, and number of drusen is seen over a 26 month time period. Most improvement chiefly noted within the central macular zone, with associated RPE improvement.

Results. Improvements were recorded in macular pigment density and visual functions, with improvement in macular appearance and changes in metamorphopsia.

Which is better...2 or 3

- Carotenoids found in macula
 - Lutein
 - Zeaxanthin
 - Mesozeaxanthin
- Does something need to be dietary to be important?
- Does it need to be able to “perform” on it’s own?

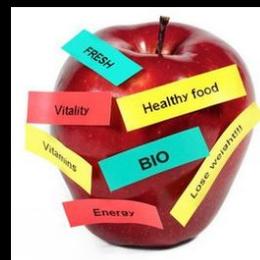
CREST

Central Retinal Enrichment Supplementation Trials

- Impact of Supplemental AO on VF in non-advanced ARMD: Head-to-head randomized trial by Akuffo et al.
- 98 of 121 completed trial of AREDS2 low Z vs AREDS2 low Z w 10mg MZ
- Improvements in MPOD, CS, glare disability and reading speed statistically significant in both groups

Where is the best place to find nutrition?

- But what's the reality?
- What foods are good for Xanthophyll?
 - Kale (40mg/serving), Spinach (12mg), Romaine lettuce (2.3mg), Broccoli (1.7mg)
- Do you ever ask your patients about f/v consumption?
- What about Mediterranean diet?
 - Approx 47% less Adv AMD
 - More L/Z the better! Hogg. Ophthalmology 11/16.
- An apple a day keeps AMD away!
 - 15% decrease Ophthalmologica 2015: Coimbra Eye Study



AREDS2

- What did the abstract from AREDS2 tell us?
- What did AREDS2 really tell us?

National Eye Institute Recommended Formula:

Nutrient	Amount (per day)	Percent Daily Value*
Vitamin C	500 mg	840%
Vitamin E	400 IU	1340%
Zinc	80 mg	540%
Copper	2 mg	100%
Lutein	10 mg	**
Zeaxanthin	2 mg	**

*Percent Daily Values (DV) based on a 2,000-calorie diet
**Daily Value (DV) not established
Speak with your doctor to determine if the updated AREDS 2 formula is right for you.



Beta Carotene

- What's up doc?
- Is it helpful?
- Is it harmful?



What about Fish Oil

- What did AREDS2 say?
- What have European studies said?
- What about other potential worries with fish oil?
 - What about DR specifically?



OK...what to think about Zinc?

- Is it friend or foe?
- It is necessary for general body function?
- What did AREDS1 say?
- What did AREDS2 say?
- What do we know about the genetics of zinc?



The NEWEST publication on Zinc

- Another by Dr. Carl Awh
- Looked at people without AMD in AREDS cataract study
- 14% of 554 developed AMD over 8 yrs
 - 6.5% w no risk alleles and 39% w 3-4 alleles
- Pts w 0-1 alleles had 2.31x risk of AMD if on AO and 3-4 had .27x risk (only 29 TOTAL in 3-4 group)

Awh et al. No AMD to Intermediate w Antiox and genetic rik: From AREDS. J Vitreoretinal Dz. 6/2017

Pharmacogenetics

- The science of determining pharmaceutical treatment based on genetics

What do we know in regards to AMD?

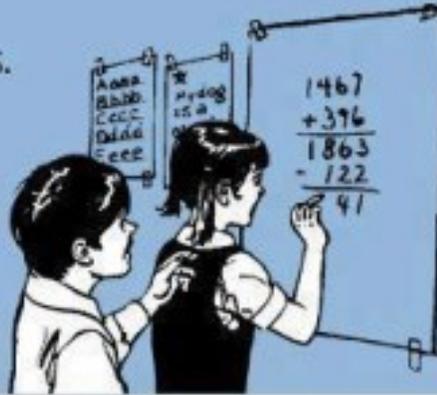
– Who do you trust?



There is more to Diabetes than sugar!

Billy has 32 candy bars. He eats 28.
 What does he have now?
 Diabetes.
 Billy has diabetes.

someecards
 user card



Do you sell supplements

- Pro vs con



Can you prescribe vitamins?

- Matter of perspective



Too much of a good thing

- Is too much of a good thing an even better thing?
- Can you get too much?

What happens?

Summary

- OD's can be a resource for patients regarding nutrition
- This can be an in-depth or only surface scratching endeavor
- Patients need help...they don't know what they don't know... (neither do we, by the way)
- Nutrition can be profitable (in several ways)

Thank You!

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