SCIENCE SUMMARY

BENEFITS OF ZEAXANTHIN & LUTEIN FOR SCREEN TIME

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Supplementation with macular carotenoids reduces psychological stress, serum cortisol, and sub-optimal symptoms of physical and emotional health in young adults

(Nicole Tressa Stringham, Philip V. Holmes, James M. Stringham - Nutritional Neuroscience, 2018)

- 59 healthy subjects
- 12-month, double-blind, placebo-controlled trial
- Objective: evaluate the effects of macular carotenoid (MC) supplementation on blood cortisol, psychological stress ratings, behavioral measures of mood, and symptoms of sub-optimal health
- Results:
    - Significant correlations were found between MPOD and Beck anxiety scores as well as Brief Symptom Inventory scores.
    - 6-month supplementation improved psychological stress, serum cortisol, and measures of emotional and physical health compared to placebo.
- Conclusion:
    - Supplementation with the MCs significantly reduces stress, cortisol, and symptoms of sub-optimal emotional and physical health.

Photochemical damage of the retina.

(Wu J1, Seregard S, Algvere PV. – Surv Ophthalmol. 2006)

- Meta-analysis
- Objective: review studies to determine if blue light causes photochemical damage to the retina and if it's linked to age-related macular degeneration (AMD).
- Results: blue light may play a role in the pathogenesis of AMD. Laboratory studies have suggested that photochemical damage includes oxidative events. Retinal cells die by apoptosis in response to photic injury. Modern molecular biology techniques help to study in-depth the basic mechanism of photochemical damage of the retina and to develop strategies of neuroprotection.

Macular Carotenoid Supplementation Improves Visual Performance, Sleep Quality, and Adverse Physical Symptoms in Those with High Screen Time Exposure

(James M. Stringham, Nicole T. Stringham, and Kevin J. O'Brien – Foods, 2017)

- 10,329 US adults
    - VisionWatch survey
- Objective: examine increasing usage of digital devices and their impact on vision and provide actionable insight
- Results:
    - 90% of adults use devices for 2+ hours a day
        - 60% use devices for 5+ hours a day
    - 65% of Americans report experiencing screen time symptoms
        - Eye strain
        - Tired eyes
        - Blurred vision
        - Dry eyes
        - Headaches
        - Neck, back, and shoulder pain
    - Adults 30 and younger experience the highest rates of screen time symptoms
    - 90% of adults don't talk to their eye care provider about their screen use

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BENEFITS OF ZEAXANTHIN & LUTEIN FOR SCREEN TIME

Effects of dietary supplementation with a combination of fish oil, bilberry extract, and lutein on subjective symptoms of asthenopia in humans

(Fuminori Kawabata and Tomoko Tsuji – Biomedical Research, 2011)

- 22 healthy participants
- 4-week, double, -blind, randomized, placebo-controlled trial
- Objective: determine the effects of dietary supplementation with a combination of fish oil, bilberry extract, and lutein on subjective symptoms of asthenopia in humans
- Results:
    - Symptoms like stiff shoulder, low back pain, frustration, dry eye, and stuffy head improved in the active group.
    - Mental fatigue was reduced in the active group.
- Conclusion
    - These results suggest that dietary supplementation with the combination of omega-3 fatty acid-rich fish oil, bilberry extract, and lutein may safely improve subjective symptoms of asthenopia and mental fatigue in humans.

Light and Eye Damage

(Gregory W. Good, OD, PhD – American Optometric Association, 2014)

- This paper is intended to answer common questions about light, specifically short-wavelength visible light known as blue light, and how it can incite eye damage.
- Blue light was positively associated with damage to the retina with both acute and chronic exposure.
    - Blue light shows the greatest effects on eye health possibly due to photochemical or photooxidative damage in the retinal pigment epithelium.
    - Age is less of a factor for damage/effect than overall exposure.
    - Children are especially sensitive to light and should be given proper protection.
- The Beaver Dam Study linked early signs of AMD with excessive exposure to sunlight (5+ hours a day) as a teenager and beyond.
- The Chesapeake Bay Watermen Study linked late AMD with cumulative sun exposure.