



*Significant results AstaReal vs placebo group at 6 months for Left and Right eye respectively **Astaxanthin group vs baseline

New Study Reveal: Effectiveness of 6-Month Natural Astaxanthin (AstaReal®) Supplementation in Children with Mild-to-Moderate Digital Eye Stain

Introduction

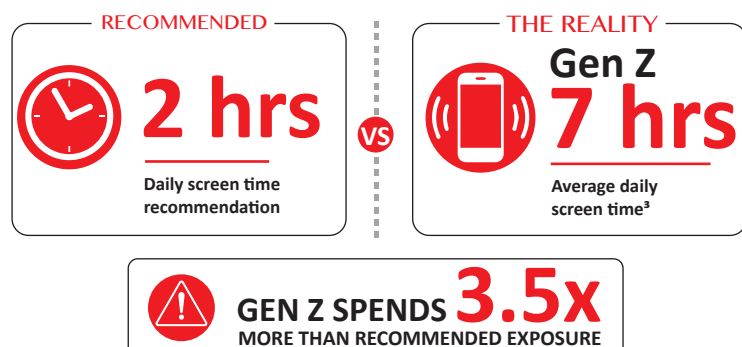
In the modern age of prolonged exposure to digital screen-based work, learning and entertainment, a condition known as Digital Eye Syndrome (DES) or also Computer Vision Syndrome (CVS) has become a global public health issue. Previous clinical studies have shown that astaxanthin may improve DES by reducing visual fatigue, improving accommodative function and ocular performance and reducing oxidative stress in the eyes. However, these studies are in adults for a duration of 4 to 8 weeks (1). Children are also a vulnerable population but there are limited studies in DES. Therefore, we set out to examine the effectiveness of 6-month AstaReal® astaxanthin supplementation in school children with mild-to-moderate DES and the outcome of the study was reported (2).

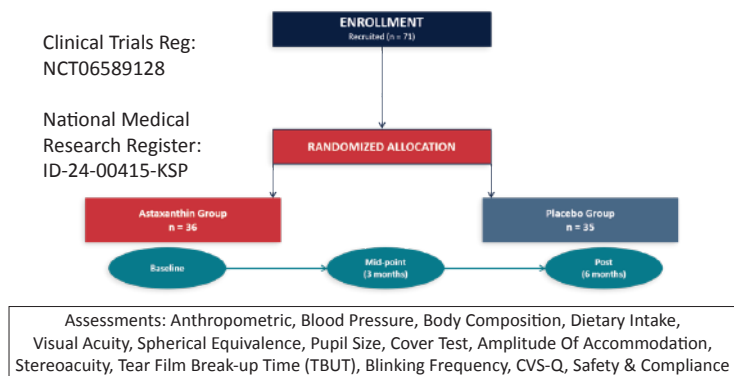
43%

Prevalence of DES
among 10–11-year-old
school children
interviewed (n=711)²

Need Gap for Children's Ocular Health

Screen time exposure is increasing rapidly in children more than before, and experts warn it causes DES. If left untreated, DES affects learning, work, sleep and overall well-being. Other studies have linked increasing rates of myopia with prolonged screen exposure and reduced outdoor time. Children are particularly at risk because myopia typically begins between the ages 6 and 14 (4) and studies have also suggested that each additional hour of daily screen time increases the risk of myopia by 21% (5). Experts and studies show a widespread prevalence of DES in children in different countries and consistently urge practical prevention and treatment strategies. The current ways to reduce digital eye strain, includes behaviour changes, ergonomic adjustments, optical aids, and ocular surface care. These measures can help, but they may only give partial relief. Furthermore, we know that nutritional deficiencies also impact ocular health (6) which is why astaxanthin supplementation in children is worth studying.





New Study Snapshot

In this study, 4mg AstaReal® astaxanthin supplementation daily contributes significantly to improvements in subjective and objective tests.

- **Digital eye strain** significantly reduced at 3 months and consistently improved by 26% vs placebo ($p < 0.05$) at 6 months based on the CVS-Q questionnaire.
- **Myopia progress** significantly reduced as suggested by improvement in spherical equivalence (left eye, 8%, $p < 0.01$; right eye, 19%, $p < 0.01$) vs placebo at 6 months.
- **Amplitude of accommodation** improved significantly vs placebo at 6 months (left eye 15%, $p < 0.05$ and right eye 12%, $p < 0.01$).
- **Tear-film** stability increased significantly in both left and right eyes (17% and 32%, $p < 0.01$ vs placebo respectively).
- **Visual acuity** significantly improved at 3 months in both eyes vs placebo group and remained consistently improved at 6 months (left eye pinhole reduced by 87%, $p < 0.01$ and right eye by 89% compared to baseline ($p < 0.01$ vs placebo).

The pupillary size showed a trend of improvement only. Other outcomes, such as the TNO stereoscopic and blinking rate remained non-significant. The safety, tolerability and compliancy throughout the 6 month's trial was high showing astaxanthin supplement was practical and acceptable for children over a long period of intervention.

References

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Assessment at 6 months	% Change Astaxanthin vs Placebo group	Astaxanthin vs Placebo p-value
CVS-Q (Eye Strain)	26% improvement	$P < 0.05$
Spherical Eqv. (Right Eye)	19% improvement	$p < 0.01$
Spherical Eqv. (Left Eye)	8% improvement	$p < 0.01$
Accommodation (Right Eye)	12% improvement	$P < 0.05$
Accommodation (Left Eye)	15% improvement	$p < 0.01$
Tear Film Stability (Right Eye)	17% improvement	$p < 0.01$
Tear Film Stability (Left Eye)	32% improvement	$p < 0.01$
Assessment at 6 months	% Change from baseline Astaxanthin group	Astaxanthin vs Placebo p-value
Visual Acuity (Right Eye) Pinhole	87% improvement	$p < 0.01$
Visual Acuity (Left Eye) Pinhole	89% improvement	$p < 0.01$

Conclusion

This is the first study in the world to examine a 6-month supplementation of 4mg AstaReal® astaxanthin in children aged 10-11. The researchers reported significant findings to ameliorate mild-to-moderate DES on a long-term basis and results of this trial will be published. A previous study reported that astaxanthin at 4 mg/day may improve both acute and chronic digital eye strain and ocular surface comfort (7). The present study corroborates these outcomes, while also suggesting a potential benefit in slowing myopia progression. Such findings indicate that astaxanthin may offer additional benefits such as supporting refractive stability while also improving dry eye in children exposed to high visual and digital demands. The diverging trajectory between treatment and placebo groups in this study suggests a treatment response that became more apparent over time. This warrants further robust and longer-term clinical investigation.

Declaration:

This study was conducted by Universiti Sains Malaysia at the Advanced Medical & Dental Institute (AMDI) and funded by Fuji Chemical Industries Co., Ltd., and AstaReal Pte Ltd.

