



Natural astaxanthin extract (AstaREAL®) derived from *Haematococcus* microalgae was detected in iris/ciliary body of New Zealand Albino (NZW) Rabbit Eyes 24 hours after ingestion. This validated a HPLC detection method and the site of action says a new study.

Astaxanthin has been reported to have many benefits in the eye. Several human clinical studies reported the alleviation of eye fatigue (by improving accommodation function) in visual display terminal (VDT) workers after oral supplementation for one month. Furthermore, astaxanthin showed anti-inflammatory action in experimental rat models. However, up to now there has been no intraocular kinetic information.

Study Details

In a collaboration between the Ophthalmology Department of Kanazawa Medical University, Japan, and Fuji Chemical Industry, Japan, researchers investigated the ocular and blood serum levels of astaxanthin in 24 NZW albino rabbits. After administering a 100 mg/kg single oral dose, astaxanthin was determined by careful extraction followed by HPLC analysis over a period of 168 hours.

Results

According to the astaxanthin detection system, the time taken to reach maximum presence (T_{max}) in serum and iris/ciliary body was 9 hours (at C_{max} 61.3 ng/mL) and 24 hours (at C_{max} 79.3) respectively. Astaxanthin was not detected in the anterior chamber of the eye. In other human studies with oral intake of astaxanthin, the T_{max} in serum ranged between 9 and 12 hours. With an HPLC detection limit of 2 ng/mL, astaxanthin was not detected in the anterior chamber. It remains possible though that astaxanthin may still be present but at a very low concentration.

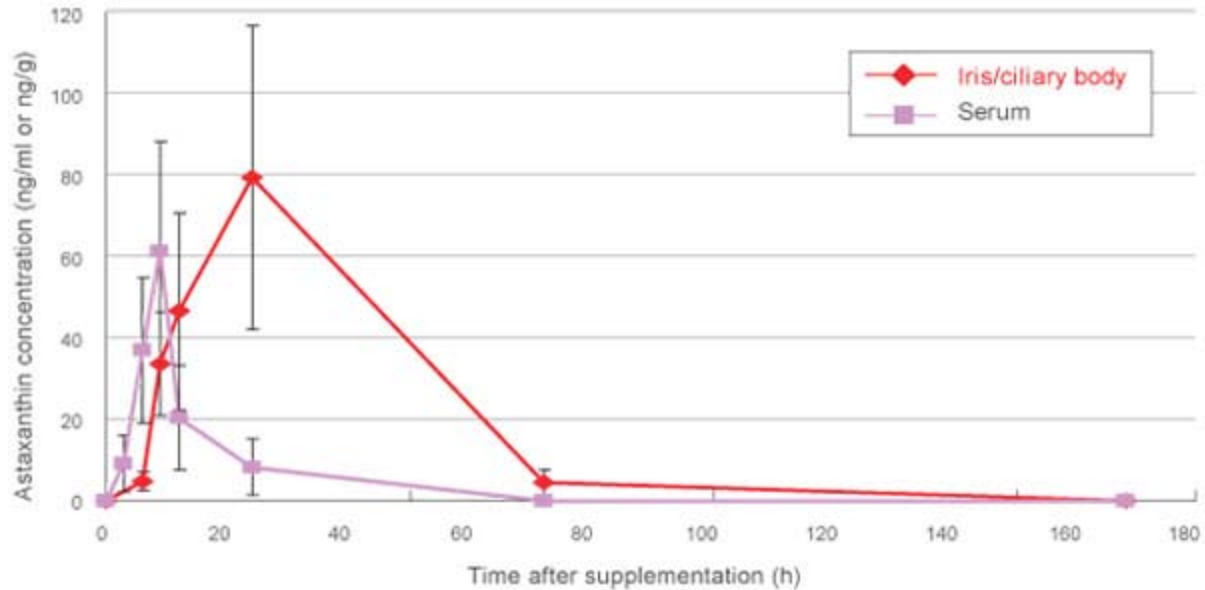


Figure 1. Time Course Changes in Astaxanthin Concentration following 100 mg/kg single oral administration. Iris/Ciliary body AUC_t 2955.7 ng h/g vs Serum AUC_t 524.7 ng h/mL.

Significance & Limitations

This may be the first published study to show the deposition of natural astaxanthin in eye of rabbits after oral ingestion. The intraocular penetration kinetics could have a similar pattern to humans but further study is necessary. Furthermore, the specific reason why astaxanthin appeared in higher concentrations in the iris/ciliary body and persisted much longer remains unanswered. This could be a future target of research.

This study adds to the growing body of science supporting astaxanthin's benefits for eye fatigue caused by VDT use.

References

2008 Fukuda *et al.*, Intraocular penetration of astaxanthin in rabbit eyes. *Atarashii Ganka*, 25(10):1461-1464 (In Japanese).

2003 Odeberg *et al.*, Oral bioavailability of the antioxidant astaxanthin in humans is enhanced by incorporation of lipid based formulations. *Eur J Pharm Sci* 19: 299-304.

Fuji Chemical Industry, Japan is the world leader in the production and research of natural astaxanthin. For more information, please visit www.astareal.com or [contact us](#).
AstaREAL is a trademark or registered trademark of Fuji Chemical Industry Co., Ltd. in Japan, United States of America, Europe and/or other countries.

FUJI CHEMICAL INDUSTRY CO., LTD.

For more information, please [contact us](#). If you would prefer not to receive email newsletter, or you've changed your email address, please [click here](#)

The information found in this publication is presented in good faith with no guarantee or obligation as to accuracy and no assumption of liability. Users should make their own tests to determine the suitability of these products for their own particular purposes. However, because of numerous factors affecting results, Fuji Chemical Industry makes no warranty of any kind, express or implied, including those of merchantability and fitness for particular purpose other than the material conforms to its applicable current standard specifications. Statements concerning the use of the products or formulations described herein are not to be construed as recommending the infringement of any patent and seller assumes no liability for the infringement arising out of such use.