



Three month clinical study shows promise of cardiovascular benefits with natural astaxanthin.

Greetings!

Astaxanthin has been reported to improve dyslipidemia and metabolic syndrome in animals but the effect in humans have not been well studied. A recently published study by Yoshida *et al.*, (2009) is the first long-term investigation in humans to show a positive outcome in subjects with moderately raised level of triglyceride. This suggests cardiovascular health benefits with the intake of natural astaxanthin. The collaborative study was performed in Japan among various medical departments of Jikei University Hospital, Chiba and Fuji Chemical Industry Co., Ltd., Toyama.

61 non-obese subjects with mild hyperlipidemia (triglyceride level 120-200 mg/dl) were recruited in a randomized double-blind placebo-controlled study investigating the effect of 0, 6, 12 and 18 mg of AstaREAL® astaxanthin per day for 12 weeks. Mean age of subjects was 44 years old and they maintained their habitual diet and lifestyle while taking natural astaxanthin. All subjects underwent anthropometric, blood pressure, and full-blood chemistry measurements at baseline and end of the study period.

Results of this latest study reveals statistically significant improvements of up to 25% reduction of triglyceride levels at 12 and 18 mg/day of astaxanthin intake (Figure 1) and up to 15% HDL increase at 6 and 12 mg/day of astaxanthin daily (Figure 2). Furthermore, adiponectin increased up to 25% at 12 and 18 mg/day of astaxanthin intake (Figure 3).

There were no differences between the energy, protein, fat, carbohydrate, and fiber among the four groups. No changes in bodyweight, total cholesterol, blood pressure or BMI were reported.

Figure 1.

Percentage decrease of triglyceride in response to astaxanthin administration
 (# $p < 0.05$ compared with control). Graph prepared from data presented in Yoshida *et al.*, 2009.

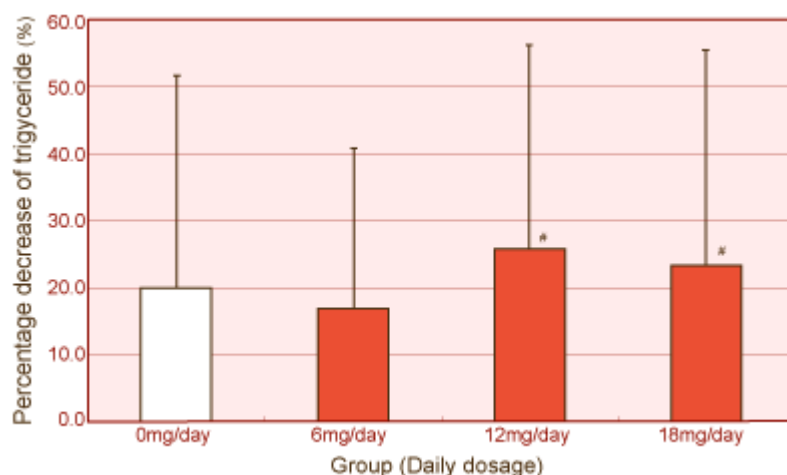


Figure 2.

Percentage increase of HDL in response to astaxanthin administration (# $p < 0.05$, ## $p < 0.01$ compared with control). Graph reproduced from data presented in Yoshida *et al.*, 2009.

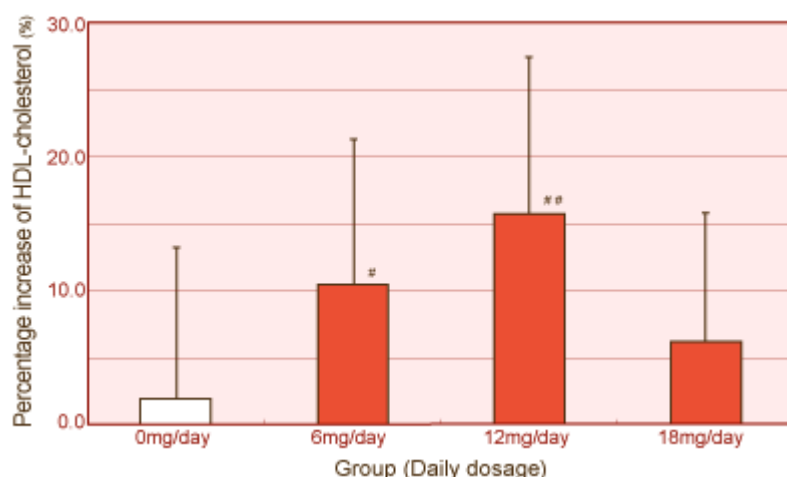
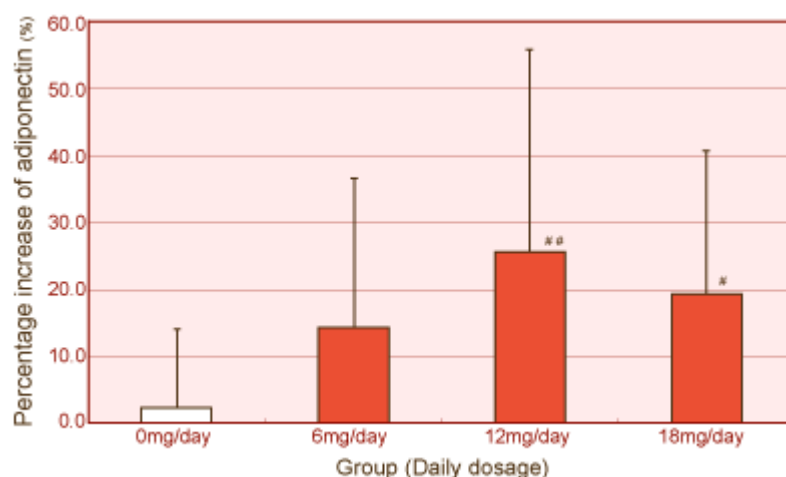


Figure 3.

Percentage increase of adiponectin in response to astaxanthin administration (# $p < 0.05$, ## $p < 0.01$ compared with control). Graph reproduced from Yoshida *et al.*, 2009.



Adiponectin, produced by adipocytes, form part of the system that controls the regulation of food intake, energy expenditure and a series of metabolic processes. Studies have shown that obesity, insulin resistance and atherosclerosis are accompanied by decreased adiponectin levels in adults.

Although the study does not reveal the specific mechanisms, astaxanthin may be expected to treat impaired metabolism and prevent atherosclerosis. However, further well-defined *in-vitro* studies, long-term and large-scale clinical trials will be needed to confirm the astaxanthin benefits.

In conclusion, this is the first human randomized, placebo-controlled trial that showed astaxanthin intake positively affected lipid profiles. Elevated triglyceride levels were significantly decreased by 12 and 18 mg/day intake whereas HDL cholesterol increased and adiponectin increased by 6 and 12 mg/day. The authors suggested that astaxanthin may be expected to treat impaired lipid metabolism and prevent atherosclerosis.

Reference: Yoshida *et al.*, 2009 *Atherosclerosis OCT 14 (Epub ahead of print)*. Administration of natural astaxanthin increases serum HDL-cholesterol and adiponectin in subjects with mild hyperlipidemia.

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