Subject: Astaxanthin hat 5-AR inhibierendes Potential
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J Herb Pharmacother. 2005;5(1):17-26. Links
A preliminary investigation of the enzymatic inhibition of 5alpha-reduction and growth of prostatic carcinoma cell line LNCap-FGC by natural astaxanthin and Saw Palmetto lipid extract in vitro.

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Inhibition of 5alpha-reductase has been reported to decrease the symptoms of benign prostate hyperplasia (BPH) and possibly inhibit or help treat prostate cancer. Saw Palmetto berry lipid extract (SPLE) is reported to inhibit 5alpha-reductase and decrease the clinical symptoms of BPH. Epidemiologic studies report that carotenoids such as lycopene may inhibit prostate cancer. In this investigation the effect of the carotenoid astaxanthin, and SPLE were examined for their effect on 5alpha-reductase inhibition as well as the growth of prostatic carcinoma cells in vitro. These studies support patent #6,277,417 B1. The results show astaxanthin demonstrated 98% inhibition of 5alpha-reductase at 300 microg/mL in vitro. Alphastat, the combination of astaxanthin and SPLE, showed a 20% greater inhibition of 5alpha-reductase than SPLE alone n vitro. A nine day treatment of prostatic carcinoma cells with astaxanthin in vitro produced a 24% decrease in growth at 0.1 mcg/mL and a 38% decrease at 0.01 mcg/mL. SPLE showed a 34% decrease at 0.1 mcg/mL. CONCLUSIONS: Low levels of carotenoid astaxanthin inhibit 5alpha-reductase and decrease the growth of human prostatic cancer cells in vitro. Astaxanthin added to SPLE shows greater inhibition of 5alpha-reductase than SPLE alone in vitro.

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paar andere sachen noch zum lesen....

Title Studies of astaxanthin on learning memory ability
and antioxidative status in mice
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• malondialdehyde (MDA)

• motility of spermatozoa
• senescence accelerated mice (SAMP8)

Abstract Abstract

Astaxanthin have been showed many physiological functions, such as nutrition requirement, reproduction performance, stabilization of protein and enzyme activity, antioxidative ability, and immunity. The purpose of the study was to examine the effects of Astaxanthin on learning memory ability and antioxidative status in different age of mice. Three and Six month-old senescence accelerated mice (SAMP8) were divided into three groups: casein diet group (control group) and casein diet supplemented with 0.01%, 0.025% Astaxanthin (experimental group respectively). After 16 weeks of feeding, body weight, food intake, aging score, open field activity test and active shuttle avoidance test were interval performed during the experiment. The biochemical parameters of serum and the liver superoxide dismutase (SOD) were analyzed after sacrificed. The SOD, malondialdehyde (MDA), total thiol concentrations, pathological examination of brain, motility and concentrations of spermatozoa in male mice were also evaluated. The results showed that there were no significant differences in the body weight, food intake, and locomotion among three groups in both 3 and 6-month-old mice, whereas 3-month-old groups showed higher food efficiency. The aging score of control groups were higher than the experimental groups in both 3 and 6-month-old mice ($P<0.05$). 3 and 6-month-old mice fed with the 0.025% Astaxanthin had significantly better single-trial passive avoidance results($P<0.05$). The experimental groups had better active shuttle avoidance response in both 3 and 6-month-old mice. In 6-month-old female mice, the mice were fed with the 0.025% Astaxanthin group that had significantly lower total cholesterol of serum than the control group ($P<0.05$). The hepatic SOD activity in the 0.025% Astaxanthin group was higher than the group in 6-month-old male mice

group was higher than that of control group in both 6-month-old mice ($P<0.05$). The MDA concentrations of brain in the experimental groups were lower than control groups in both 3 and 6-month-old mice ($P<0.05$). The total thiol concentrations of brain in the experimental group were higher than control groups in 6-month-old mice ($P<0.05$).

groups were lower than control groups in both 3 and 6-month-old male mice, whereas 3-month-old female mice fed with the 0.025% Astaxanthin

brain than control group ($P<0.05$). 3-month-old male mice fed with the 0.025% Astaxanthin had significantly better motility of spermatozoa ($P<0.05$). The concentrations of spermatozoa were no differences in both 3 and 6-month-old male mice. In summary, we conclude the supply of Astaxanthin may improve aging score, learning and memory ability and reducing the brain pathological changed in SAMP8 mice. It is

suggested that may due to promote the antioxidative ability and lowering the oxidative injury after Astaxanthin supplementation.
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Prevention of diabetic nephropathy by treatment with astaxanthin in diabetic db/db mice.
Biofactors. 2004;20(1):49-59.
Oxidative stress is implicated as an important mechanism by which diabetes causes nephropathy. Astaxanthin, which is found as a common pigment in algae, fish, and birds, is a carotenoid with significant potential for antioxidative activity. In this study, we examined whether chronic administration of astaxanthin could prevent the progression of diabetic nephropathy induced by oxidative stress in mice. The mice were divided into three groups as follows: non-diabetic, diabetic, and diabetic treated with astaxanthin. After 12 weeks of treatment, the astaxanthin -treated group showed a lower level of blood glucose compared with the non-treated db/db group. The results suggested that the antioxidative activity of astaxanthin reduced the oxidative stress on the kidneys and prevented renal cell damage. In conclusion, administration of astaxanthin might be a novel approach for the prevention of diabetes nephropathy.

Antihypertensive and neuroprotective effects of astaxanthin in experimental animals.
Biol Pharm Bull. 2005 Jan;28(1):47-52.
Astaxanthin is a natural antioxidant carotenoid that occurs in a wide variety of living organisms. We investigated, for the first time, antihypertensive effects of astaxanthin in spontaneously hypertensive rats (SHR). Oral administration of astaxanthin for 14 d induced a significant reduction in the arterial blood pressure (BP) in SHR but not in normotensive Wistar Kyoto (WKY) strain. The long-term administration of astaxanthin (50 mg/kg) for 5 weeks in stroke prone SHR (SHR-SP) induced a significant reduction in the BP. It also delayed the incidence of stroke in the SHR-SP. To investigate the action mechanism of astaxanthin, the effects on PGF(2alpha)-induced contractions of rat aorta treated with NG-nitro-L-arginine methyl ester (L-NAME) were studied in vitro. Astaxanthin induced vasorelaxation mediated by nitric oxide (NO). The results suggest that the antihypertensive effect of astaxanthin may be due to a NO-related mechanism. astaxanthin also showed significant neuroprotective effects in ischemic mice, presumably due to its antioxidant potential. Pretreatment of the mice with astaxanthin significantly shortened the latency of escaping onto the platform in the Morris water maze learning performance test. In conclusion, these results indicate that astaxanthin can exert beneficial effects in protection against hypertension and stroke and in improving memory in vascular dementia.

Alpha-tocopherol and astaxanthin decrease macrophage infiltration, apoptosis and vulnerability in atheroma of hyperlipidaemic rabbits.
J Mol Cell Cardiol. 2004 Nov;37(5):969-78.
The composition of atherosclerotic plaques, not just macroscopical lesion size, has been implicated in their susceptibility to rupture and the risk of thrombus formation. By focusing on the quality of lipids, macrophages, apoptosis, collagen, metalloproteinase expression and plaque integrity, we evaluated the possible anti-atherosclerotic effect of the antioxidants alpha-tocopherol and astaxanthin in Watanabe heritable hyperlipidemic (WHHL) rabbits. Thirty-one WHHL rabbits were divided into three groups and were fed a standard diet, as controls (N =10), or a standard diet with the addition of 500 mg alpha-tocopherol per kg feed (N =11) or 100 mg astaxanthin per kg feed (N =10) for 24 weeks. We found that both antioxidants, particularly astaxanthin, significantly decreased macrophage infiltration in the plaques although they did not affect lipid accumulation. All lesions in the astaxanthin-treated rabbits were classified as early plaques according to the distribution of collagen and smooth muscle cells. Both antioxidants also improved plaque stability and significantly diminished apoptosis, which mainly occurred in macrophages, matrix metalloproteinase three expressions and plaque ruptures. Although neither antioxidant altered the positive correlations between the lesion size and lipid accumulation, the lesion size and apoptosis were only positively correlated in the control group. Astaxanthin and alpha-tocopherol may improve plaque stability by decreasing macrophage infiltration and apoptosis in this atherosclerotic setting. Apoptosis reduction by alpha-tocopherol and astaxanthin may be a new anti-atherogenic property of these antioxidants.

In vitro effects of astaxanthin combined with ginkgolide B on T lymphocyte activation in peripheral blood mononuclear cells from asthmatic subjects.
J Pharmacol Sci. 2004 Feb;94(2):129-36.
This study was undertaken to identify novel approaches to pharmacological treatment of asthma. Here we hypothesize that the platelet-activating factor receptor antagonist ginkgolide B (GB) in combination with the antioxidant carotenoid astaxanthin suppresses T cell activation comparably to two commonly-used antihistamines: cetirizine dihydrochloride (CTZ) and azelastine (AZE). These results suggest that astaxanthin and GB may have application as novel antiasthmatic formulations.

Astaxanthin limits exercise-induced skeletal and cardiac muscle damage in mice.
Antioxid Redox Signal. 2003 Feb;5(1):139-44.
Dietary antioxidants may attenuate oxidative damage from strenuous exercise in various tissues. Beneficial effects of the antioxidant astaxanthin have been demonstrated in vitro, but not yet in vivo. We investigated the effect of dietary supplementation with astaxanthin on oxidative damage induced by strenuous exercise in mouse gastrocnemius and heart. C57BL/6 mice (7 weeks old) were divided into groups: rested control, intense exercise, and exercise with astaxanthin supplementation. After 3 weeks of exercise acclimation, both exercise groups ran on a treadmill at 28 m/min until exhaustion. Exercise-increased 4-hydroxy-2-nonenal-modified protein and 8-hydroxy-2'-deoxyguanosine in gastrocnemius and heart were blunted in the astaxanthin group. Increases in plasma creatine kinase activity, and in myeloperoxidase activity in gastrocnemius

and heart, also were lessened by astaxanthin. Astaxanthin showed accumulation in gastrocnemius and heart from the 3 week supplementation. Astaxanthin can attenuate exercise-induced damage in mouse skeletal muscle and heart, including an associated neutrophil infiltration that induces further damage.

Oral bioavailability of the antioxidant astaxanthin in humans is enhanced by incorporation of lipid based formulations.
Eur J Pharm Sci. 2003 Jul;19(4):299-304.
Astaxanthin is a carotenoid with antioxidant properties, synthesised by plants and algae, and distributed in marine seafood. Astaxanthin is also available as a food supplement, but, like other carotenoids, is a very lipophilic compound and has low oral bioavailability. However, astaxanthin bioavailability can be enhanced in the presence of fat.

Safety of an astaxanthin-rich Haematococcus pluvialis algal extract: a randomized clinical trial.
J Med Food. 2003 Spring;6(1):51-6.
A growing body of scientific literature indicates that astaxanthin is a more powerful antioxidant than other carotenoids and vitamin E and may confer numerous health benefits. The purpose of this investigation was to conduct a human safety study with a Haematococcus pluvialis algal extract with high levels of astaxanthin. Thirty-five healthy adults age 35-69 years were enrolled in a randomized, double-blind, placebo-controlled trial of 8 weeks' duration. All participants took three gelcaps per day, one at each meal. Nineteen participants received gelcaps with an algal extract in safflower oil, containing 2 mg of astaxanthin each (treatment); 16 participants received gelcaps containing safflower oil only (placebo). Blood pressure and blood chemistry tests, including a comprehensive metabolic panel and cell blood count, were conducted at the beginning of the trial and after 4 and 8 weeks of supplementation. No significant differences were detected between the treatment and the placebo groups after 8 weeks of supplementation with astaxanthin in the parameters analyzed, except for serum calcium, total protein, and eosinophils. Although the differences in these three parameters were statistically significant, they were very small and are of no clinical importance. These results reveal that 6 mg of astaxanthin per day from a H. pluvialis algal extract can be safely consumed by healthy adults.

Haematococcus astaxanthin: applications for human health and nutrition.
Trends Biotechnol. 2003 May;21(5):210-6.
The carotenoid pigment astaxanthin has important applications in the nutraceutical, cosmetics, food and feed industries. Haematococcus pluvialis is the richest source of natural astaxanthin and is now cultivated at industrial scale. Astaxanthin is a strong coloring agent and a potent antioxidant - its strong antioxidant activity points to its potential to target several health conditions. This article covers the antioxidant, UV-light protection, anti-inflammatory and other properties of astaxanthin and its possible role in many human health problems. The research reviewed supports the assumption that protecting body tissues from oxidative damage with daily ingestion of natural astaxanthin might be a practical and beneficial strategy in health management.

Asian J Androl. 2005 Sep;7(3):257-62.Click here to read Links
Combined conventional/antioxidant "Astaxanthin" treatment for male infertility: a double blind, randomized trial.

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AIM: To evaluate the treatment of male infertility with a strong natural antioxidant, in addition to conventional treatment. METHODS: Using a double blind, randomized trial design, 30 men with infertility of > or =2 months and female partners with no demonstrable cause of infertility received conventional treatment according to the guidelines of the World Health Organization (WHO), and either a strong antioxidant Astaxanthin 16 mg/day (AstaCarox, AstaReal AB, Gustavsberg, Sweden) or placebo for 3 months. The effects of treatment on semen parameters, reactive oxygen species (ROS), zona-free hamster oocyte test, serum hormones including testosterone, luteinizing hormone (LH), follicle stimulating hormone (FSH) and Inhibin B, and spontaneous or intrauterine insemination (IUI)-induced pregnancies were evaluated. RESULTS: ROS and Inhibin B decreased significantly and sperm linear velocity increased in the Astaxanthin group (n = 11), but not in the placebo group (n = 19). The results of the zona-free hamster oocyte test tended to improve in the Astaxanthin group in contrast with the placebo group, though not reaching statistical significance. The total and per cycle pregnancy rates among the placebo cases (10.5 % and 3.6 %) were lower compared with 54.5 % and 23.1 % respectively in the Astaxanthin group (P = 0.028; P = 0.036). CONCLUSION: Although the present study suggests a positive effect of Astaxanthin on sperm parameters and fertility, the results need to be confirmed in a larger trial before recommending Astaxanthin for the complementary treatment of infertile men.

Hum Reprod. 2005 Apr;20(4):1006-12. Epub 2005 Jan 21.Click here to read Links
Antioxidant intake is associated with semen quality in healthy men.

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BACKGROUND: We seek to determine whether dietary and supplement intake of specific

micronutrients (zinc and folate) and antioxidants (vitamins C, E and beta-carotene) is associated with semen quality. METHODS: Ninety-seven healthy, non-smoking men provided semen and were interviewed. Average daily nutrient intake from food and supplements was derived from a self-administered food frequency questionnaire. Intake levels were summarized as low, moderate and high. Semen volume, sperm concentration, total sperm count, motility, progressive motility and total progressively motile sperm count (TPMS) were measured. RESULTS: After controlling for covariates, a high intake of antioxidants was associated with better semen quality but, in almost all cases, there was no clear dose relationship in that moderate intake groups had the poorest semen quality. For example, positive associations were observed between vitamin C intake and sperm number as reflected in the higher mean count (P=0.04), concentration (P=0.05) and TPMS (P = 0.09); between vitamin E intake and progressive motility (P = 0.04) and TPMS (P = 0.05); and between beta-carotene intake and sperm concentration (P = 0.06) and progressive motility (P = 0.06). Folate and zinc intake were not associated with improved semen quality. CONCLUSIONS: In a convenience sample of healthy non-smoking men from a non-clinical setting, higher antioxidant intake was associated with higher sperm numbers and motility.