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Astashine Silver Capsules: An Excellent Choice for Cardiovascular Health

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A B S T R A C T

Astaxanthin is a xanthophyll carotenoid present in microalgae, fungi, complex plants, seafood, flamingos and quail. It is an antioxidant with anti-inflammatory properties and as such has potential as a therapeutic agent in atherosclerotic cardiovascular disease. Experimental studies demonstrated that astaxanthin protects the myocardium. In a randomized, double blind study on humans it was shown that astaxanthin decreased the low-chronic inflammation by reducing oxidative stress. Earlier studies have confirmed that astaxanthin reduces inflammation by inhibiting activation on the transcription factor NF-kB. Due to astaxanthin's ability to protect cells from oxidation and its anti-inflammatory capacity, astaxanthin has potential to prevent the development of metabolic diseases. L-carnitine is a necessary cofactor for mitochondrial function, stimulating oxidative metabolism of glucose and fatty acids particularly under conditions of ischemia. L-carnitine protects against ischemiainduced myocardial dysfunction and has been demonstrated to improve cardiac function and exercise performance in patients with angina, myocardial infarction, and heart failure. L-carnitine can decrease frequency of angina attacks; reduce deleterious cardiac remodeling and arrhythmias, and improve survival after MI; and decrease symptoms of CHF while increasing long term survival. L-carnitine also benefits peripheral vascular disease. This article reviews the current available scientific literature regarding the effect of astashine silver capsules on the cardiovascular health.

Keywords: Astashine silver capsules, cardiovascular Health.

A R T I C L E I N F O

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1. Introduction

Oxidative stress is a condition in which there is an imbalance between reactive free radicals and antioxidants. It is found that people with metabolic syndrome has a poor antioxidant status compared to those without metabolic syndrome [1,3]. Oxidative stress will trigger inflammation by activating the transcription factor NF-kB that will turn on pro-inflammatory.

Figure 1

Increased amount of reactive oxygen species (ROS) followed by inflammation is described as an underlying cause in the progress of metabolic diseases. ROS and inflammation trigger fat accumulation in the liver (NAFLD) which will increase blood lipids and enhance the risk for developing atherosclerosis plaque. ROS and inflammation will further reduce nitric oxide (NO) and increase the amount of oxidized nitric oxide (NOx) which leads to hypertension. Finally, oxidative stress and inflammation have a negative effect on insulin resistance (IR) which causes hyperglycemia. Research studies have shown that astashine silver casules has positive effects on metabolic abnormalities by reducing ROS and inflammation.

Composition of Astashine silver casules

Astaxanthin - 2mg (Naturally derived from Haematococcus pulvialis algae extract, which is microencapsulated) & L-Carnitine L-Tartarate 368 mg.

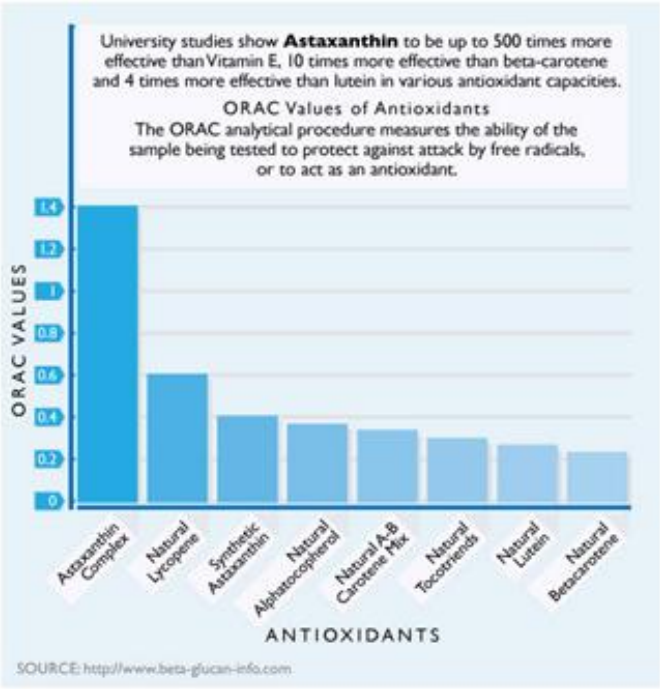

Figure 2

Figure 3

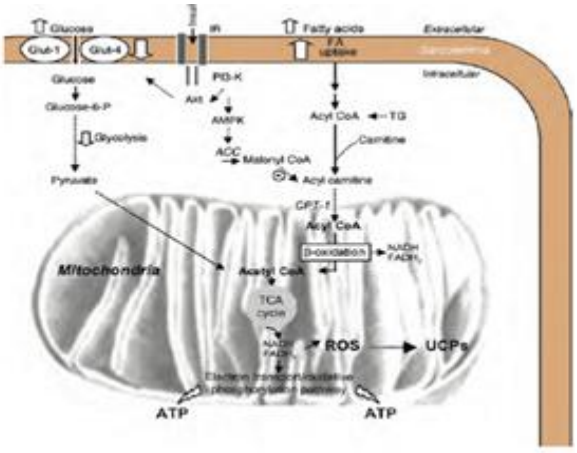

Figure 4: Role of L-carnitine in cellular resiration

Clinical Study Reports on Astaxanthin in Astashine Silver Capsules:

In a randomized, double blind study on humans it was shown that astaxanthin decreased the low-chronic inflammation by reducing oxidative stress [4]. Earlier studies have confirmed that astaxanthin reduces inflammation by inhibiting activation on the transcription factor NF-kB [5]. Due to astaxanthin's ability to protect cells from oxidation and its anti-inflammatory capacity, astaxanthin has potential to prevent the development of metabolic diseases.

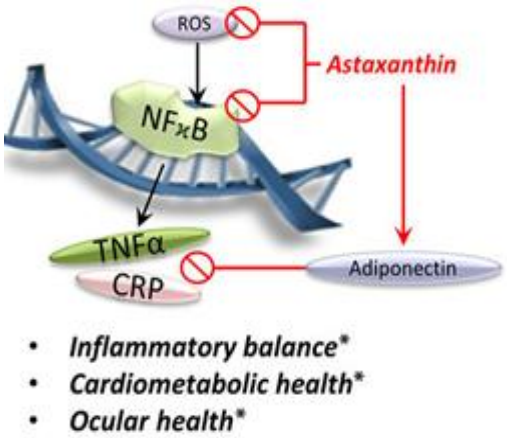

Figure 5

Astaxanthin in Astashine silver capsules improves blood lipids and increases adiponectin: Individuals with low levels of the "healthy" HDL-cholesterol and high levels of

the "bad" LDL-cholesterol who also have high triglycerides level are more likely to develop cardiovascular disease. A recent study found that supplementation of astaxanthin to humans had positive effects on blood lipids [6]. 61 subjects with mild hyperlipidemia were recruited in a randomized double-blind placebo-controlled study investigating the effect of 0, 6, 12 and 18 mg of astaxanthin per day for 12 weeks. Results showed significant improvements of up to 25% reduction of triglyceride levels at 12 and 18 mg/day of astaxanthin intake and up to 15% HDL increase at 6 and 12 mg/day of astaxanthin daily . Furthermore, the healthy and anti-inflammatory cytokine adiponectin increased up to 25% at 12 and 18 mg/day of astaxanthin intake. Studies have shown that obesity, insulin resistance and atherosclerosis are accompanied by decreased adiponectin levels in adults. These results suggest that astaxanthin sustains cardiovascular health by improving blood lipids and increasing adiponectin. The effect of astaxanthin on blood lipids can be explained by its ability to prevent fat liver since fat accumulation in the liver increases blood lipids. In addition, fat accumulation in the liver will trigger free radicals production which enhances inflammatory injuries like statosis, fibrosis and necrosis.

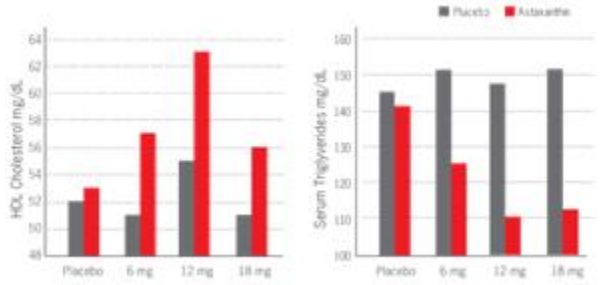

Figure 6

In a recent published study in rats, it was shown that astaxanthin reduced fats in the liver [7]. The study evaluated the effects of astaxanthin in mice by feeding an unbalanced diet. Mice were fed either normal or a high fat-high fructose diet (HFFD). HFFD-fed mice registered significant increase in liver weight as a consequence of a higher level of fat. However, mice fed with HFFD and astaxanthin had reduced amount of fats in the liver and the liver weight was lower . In addition, animals that were fed with astaxanthin also reduced several biomarkers for oxidative stress. Percentage increase of HDL in response to astaxanthin administrations in 61 subjects with mild hyperlipidemia (Oxidation of the blood lipids, especially on the LDL-cholesterol, is the main cause of atherosclerotic plaques.

Oxidized LDL-cholesterol attracts macrophages and cause inflammation which finally will result in the formation of foam cells and plaque. Atherosclerotic plaques may cause heart attack, stroke and other life threaten symptoms. Supplementation of astaxanthin has demonstrated in several human studies to reduce the oxidation on lipids in the plasma. In one human study, the oxidation of LDL was reduced dose dependently during two weeks of supplementation. A protective effect was seen even at a dose of 1.8 mg astaxanthin/day [9]. This finding has further been supported by another randomized, double-blind study in humans including 40 healthy volunteers that were supplemented with astaxanthin during 8 weeks [10] .

The astaxanthin supplementation significantly reduced oxidation of the most easily oxidized fatty acids in the plasma. In addition, a recent randomized, double blind study including 30 subjects has shown that astaxanthin reduced oxidation of the red blood cells in the plasma significantly compared to placebo[11]. These three human studies clearly indicate that astaxanthin reduces oxidation in the human plasma and by so may reduce the risk for developing atherosclerosis. Studies have also shown that astaxanthin reduces plaques and inflammation in the arterial wall. Astaxanthin supplementation to rabbits that spontaneously developed atherosclerosis resulted in more stable plaques and less ruptured plaques than in the control group. This was explained by reduced inflammation in the arterial wall measured by less invading macrophages [12].

Astaxanthin in Astashine silver capsules Lowers hypertension by improving vascular tone

Oxidation and inflammation in the arterial wall leads to increase the vascular tone followed by higher blood pressure. Studies have showed that high blood pressure is associated with increased level of oxidative stress. The reason is that oxidative stress decreases the bioavailability on nitric oxide (NO) and increases oxidized nitric oxide (NOx). NO is important in the regulation of the vascular tone and a declined level of NO will therefore reduce the flexibility and the elasticity of the arterial wall and by so cause hypertension. Several studies suggest that astaxanthin decreases high blood pressure by improving vascular tone and the bioavailability of NO. In an open human study, High fat and fructose diet (HFFD) increased fat vacuoles in the liver compared to normal diet (CON). However, mice that had HFFD diet and astaxanthin reduced fat accumulation in the liver and had therefore fewer fatty vacuoles (7).

The amount of oxidized fatty acids (Lipidperoxidation) in humans treated with 8 mg of astaxanthin or placebo during 12 weeks (10). Before After Placebo. Lipid peroxidation (µ mol/l) *p < 0.05 * Before and After Astaxanthin healthy post-menopausal women ingested 12 mg of astaxanthin everyday for eight weeks and their systolic and diastolic blood pressure significantly decreased [13]. In addition, astaxanthin has shown beneficial effects on blood pressure in spontaneously hypertensive rats in four different studies [14-17]. The effects are clarified by an improved vascular tone due to increased amount of NO followed by fewer and straighter elastin features in the arterial wall. Astaxanthin was given to the diet of type 2 diabetic mice. The mice were injected with high concentration of glucose and the blood glucose was than measured. Astaxanthin significantly decreased blood glucose levels compared to placebo group which demonstrate a better insulin sensitivity with astaxanthin. Furthermore, the group treated with astaxanthin had better insulin production in the pancreas compared to the placebo group. Two recent published

studies are confirming the effect of astaxanthin on insulin sensitivity [14, 17]. In one of the study, astaxanthin had similar effects on insulin sensitivity like the prescription diabetic drug piaglitazone [17]. Poor insulin sensitivity results in difficulties to transport glucose from the blood out to the glycogen and tissues. The result will be an increased blood glucose followed by hyperglycemia which can result in toxic conditions. Moreover, high glucose levels induce oxidative stress which triggers inflammatory reaction and by time damages the producing of insulin in pancreas.

Researches on mice have shown that astaxanthin reduces blood glucose, improves insulin sensitivity and then protects the progression of kidney damage in type 2 diabetic mice [19]. The treated mice showed significant improvements of renal insufficiency and preserved the function of the mesengial cells in the kidney glomerulus probably by enhancing the capacity of the mitochondria. The power of astaxanthin lays in its molecular structure. Serum insulin level after glucose intolerance tests in diabetic mice. Astaxanthin significantly increased insulin production in pancreas [18].

Research results indicate that astaxanthin has ability to prevent metabolic diseases thanks of its strong antioxidant and anti-inflammatory capacity. Astaxanthin is a fat-soluble antioxidant and has been referred as the "king of the carotenoids" due to its strong antioxidant power. Astaxanthin has shown to be up to 500 times more efficient than vitamin E and 10 times stronger than β-carotene (20). The power of astaxanthin is described by its unique molecular structure which enables it to stretch through the membrane and protect the cells and membranes (21). Astaxanthins unique molecular structure enables it to stay both in and outside the cell membrane which gives better protection as compared to β-carotene and vitamin C which respectively can only be positioned inside or outside the lipid bilayer (21).

Clinical Study Reorts on L-Carnitine in Astashine Silver Capsules

Cardiovascular Disease

Angina and Ischemia: L-carnitine (oral doses ranging from 900-3,000 mg daily) has been shown to moderately improve exercise tolerance and reduce ECG indices of ischemia in patients with stable angina. Estimates suggest upward of 22 percent of subjects might become angina-free during supplementation periods. Increasing benefits are often observed with longer supplementation.[22-25] Angina patients receiving L-carnitine have experienced functional improvement, including a reduction in the number of premature ventricular contractions at rest, an increase in maximal systolic arterial blood pressure, and a reduction in ST-segment depression during maximal effort. In addition, a concomitant increase in the number of patients belonging to class I of the NYHA classification (as opposed to classes II and III) and a reduction in the consumption of cardioactive drugs has been reported. [26] In subjects with ischemia-induced NYHA II or III cardiac insufficiency, L-carnitine supplementation (1 g three times daily for 120 days), in addition to the usual medications (digitalis, beta-blockers, calcium antagonists, nitrates), resulted in improvements in exercise performance and hemodynamic parameters. Benefits were maintained beyond the L-carnitine supplementation period.[27]

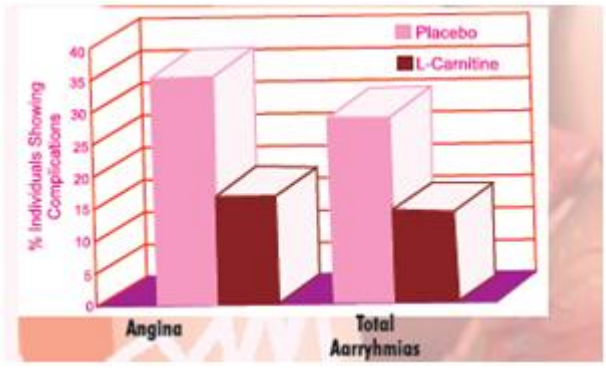

Figure 7

2. Peripheral Vascular Disease

In a double-blind, crossover study of subjects with peripheral vascular disease, walking distance improved from an average of 174 minutes with placebo to 306 minutes with L-carnitine at a dose of 2 g twice daily for three weeks. [28, 29] In healthy subjects, L-carnitine was found to inhibit fatty-acid induced endothelial dysfunction intended to simulate that seen in obesity or type 2 diabetes.

Cardiogenic Shock

L-carnitine supplementation during cardiogenic shock improved metabolic acidosis and survival rate in hospitalized individuals. [30,31]

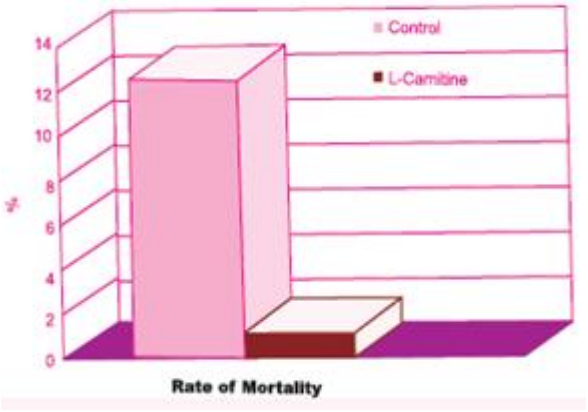

Figure 8

Cardiomyopathy

Long-term supplementation of L-carnitine (2 g daily) for the treatment of heart failure caused by dilated cardiomyopathy resulted in improvement in survival rate, ejection fraction, Weber classification, maximal time of cardiopulmonary exercise test, peak VO2 consumption, arterial and pulmonary blood pressure, and cardiac output.[32,33]

Myocardial Infarction:

Following a recent myocardial infarction (MI), a marked reduction in mortality was observed with 12-month supplementation of 4 g daily L-carnitine (1.2%) when compared to controls (12.5%). Significant improvements

were also noted in heart rate and anginal attacks.[34] Additional research confirms a benefit in terms of reduced mortality in individuals given L-carnitine following MI.[35-37]

Hyperlipidemia

L-carnitine (2-3 g daily) resulted in improved lipid profiles in individuals with hyperlipidemia, with reductions in total and LDL-cholesterol and increased plasma apolipoprotein A-1 and B levels. Normalization of lipid levels occurred in a substantial number of subjects with continued supplementation for one year.[38], L-carnitine supplementation (2 g daily) also decreased triglycerides in individuals with essential hypertension. In a study of pediatric patients on dialysis, oral L-carnitine at 50 mg/kg/day for 30 days resulted in significant decrease in apolipoprotein B levels, with no changes in other lipid parameters. L-carnitine (2 g daily) significantly reduced lipoprotein (a) (Lp(a)) levels in 14 of 18 subjects. Reductions in Lp(a) were greater in individuals with more marked elevations prior to supplementation; in a significant number of subjects the reduction of Lp(a) resulted in a return to the normal range.42 Similar results were found in hypercholesterolemic patients newly diagnosed with type 2 diabetes, with significant decreases in Lp(a) levels noted after three and six months of 1 g L-carnitine twice daily. Other measurements taken but not significantly impacted by L-carnitine were body mass index, fasting glucose, postprandial glucose, glycosylated hemoglobin, LDL- and HDL-cholesterol, total cholesterol, triglycerides, and apolipoproteins A-1 and B. [39]

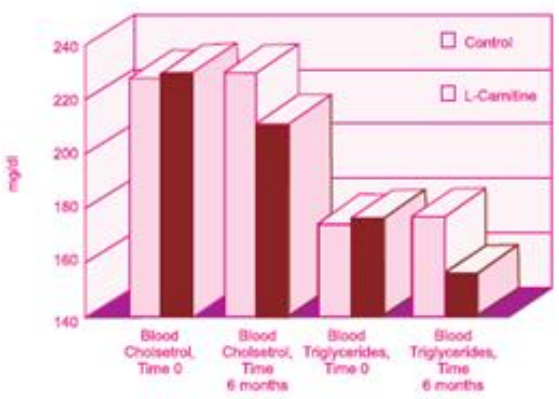

Figure 9

3. Safety of Astashine Silver Capsules

Astaxanthin has demonstrated safety in numerous human clinical trials. In one open-label clinical study on subjects with metabolic syndrome (n=17) . Astaxanthin (16 mg/day, for three months) significantly raised blood bilirubin($p \leq 0.05$), potassium ($p \leq 0.05$), and creatine kinase ($p \leq 0.01$), although all three values remained within normal range. Also, astaxanthin significantly lowered the liver enzyme gamma-glutamyl transpeptidase (GGTP; $p \leq 0.05$). Since the researchers noted this enzyme was abnormally elevated in 11 of the 17 subjects at baseline, this astaxanthin effect may have been beneficial. Animal experiments have investigated astaxanthin at levels well over 120 mg/day in human equivalents, without causing apparent harm. Hoffman-La Roche confirmed its safety with extensive tests, including acute toxicity, mutagenicity, teratogenicity, embryotoxicity, and reproductive toxicity. L-carnitine is listed as pregnancy category B, indicating animal studies have revealed no harm to the fetus but that no adequate studies in pregnant women have been conducted. L-carnitine has been given to pregnant women late in pregnancy with resulting positive outcomes. The racemic mixture (D,L-carnitine) should be avoided. D-carnitine is not biologically active and might interfere with the proper utilization of the L isomer. In uremic patients, use of the racemic mixture has been correlated with myasthenia-like symptoms in some individuals.

4. Supplement Facts

Presentation: 60 capsules

Usage: As a food supplement combination of antioxidants to improve health and vitality.

Contra-indications: Product is contra-indicated in persons with Known hypersensitivity to any component of the product hypersensitivity to any component of the product.

Recommended usage: *Adults:* two capsules per day along with food.

"Do not exceed the recommended daily dose"

Administration: Taken by oral route at anytime with food.

Precautions: Food Supplements must not be used as a substitute for a varied and balanced diet and a healthy lifestyle. This Product is not intended to diagnose, treat, cure or prevent any diseases. Do not exceed the recommended daily dose.

Warnings:

If you are taking any prescribed medication or has any medical conditions or have any medical conditions (seizures) under age group 17 year always consults doctor or healthcare practitioner before taking supplements.

Side Effects:

Mild side effects like nausea, headache and vomiting in some individuals have been reported.

Storage: Store in a cool, dry and dark place. Keep out of reach of children.

5. Conclusion

Astaxanthin in Astashine silver casules prevents lipid peroxidation and inflammation in the arterial wall and enhances the capacity of the mitochondria. As a result, astaxanthin improves blood lipids, prevents fatty liver disease, reduces the risk for atherosclerosis, lowers hypertension, improves insulin sensitivity and prevents renal damage. So, astaxanthin gives potential to help thousands of people suffering of the metabolic syndrome with high risk to develop cardiovascular disease. L-carnitine in Astashine silver casules protects against ischemia induced myocardial dysfunction and has been demonstrated to improve cardiac function and exercise performance in patients with angina, myocardial infarction, and heart failure. L-carnitine can decrease frequency of angina attacks; reduce deleterious cardiac remodeling and arrhythmias, and improve survival after MI; and decrease

symptoms of CHF while increasing long term survival. L-carnitine also benefits peripheral vascular disease.

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