



Live long life, stay healthy with pugos antioxidant- antiageing nutrition

GovindShukla, Pyaram manasa, Akanksha Sonal Khess, Sandeep kunche, Anusha kandala, Arun Kumar Junjipelly, C.J.Sampath Kumar

Pugos Nutrition Research Centre Hyderabad,

A unit of PUGOS Products Pvt. Ltd. 42, 2ndFloor, Leelavathi Mansion, 6th Cross, Margosa Main Road Malleshwaram Bangalore-56003, INDIA

Corresponding author: R. Sivakumar

ABSTRACT

Antioxidants are our first line of defense against free radical damage, and are critical for maintaining optimum health and wellbeing. The need for antioxidants becomes even more critical with increased exposure to free radicals. Pollution, cigarette smoke, drugs, illness, stress, and even exercise can increase free radical exposure. Because so many factors can contribute to oxidative stress, individual assessment of susceptibility becomes important. Antioxidants terminate the chain reactions by removing free radical intermediates, and inhibit other oxidation reactions. They do this by being oxidized themselves, so antioxidants are often called as reducing agents. Antioxidants are widely used as ingredients in dietary supplements and have been investigated for the prevention of diseases such as cancer, coronary heart disease and even altitude sickness. The present paper reviews the role of Pugos Antioxidant Nutrition for Protection against Pollution, tobacco, cigarette smoke, drug addiction, illness, stress, alcohol, medications, trauma, cold, infections, poor diet, toxins, radiation.

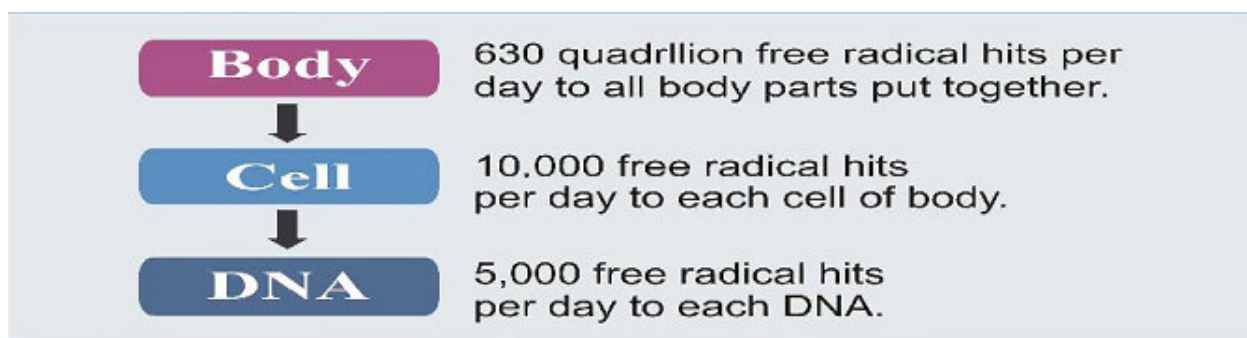
Keywords: Antioxidants, Oxidative stress, Pollution, tobacco, cigarette smoke, drug addiction, illness, stress, alcohol, medications, trauma, cold, infections, poor diet, toxins, radiation.

INTRODUCTION

OXIDATIVE STRESS occurs in response to excessive levels of cytotoxic oxidants and free radicals in the environment. Antioxidant is a chemical compound or substance that inhibits oxidation to protect body cells from the damaging effects of oxidation.

The term "oxidative stress" has been coined to represent a shift towards the pro-oxidants in the pro-oxidant/antioxidant balance that can occur as a result of an increase in oxidative

metabolism. Increased oxidative stress at the cellular level can come about as a consequence of many factors, including exposure to alcohol, medications, trauma, cold, infections, poor diet, toxins, radiation, or strenuous physical activity. Protection against all of these processes is dependent upon the adequacy of various antioxidant substances that are derived either directly or indirectly from the diet. Consequently, an inadequate intake of antioxidant nutrients may compromise antioxidant potential, thus compounding overall oxidative stress.



Oxidative stress to body, cell & dna

Oxidative stress and human disease

Oxidative damage to DNA, proteins, and other macromolecules has been implicated in the pathogenesis of a wide variety of diseases, most notably heart disease and cancer.

Clinical intervention trials suggest that antioxidants may play a pivotal role in preventing or slowing the progression of wide variety of diseases, such as heart disease and some forms of cancer.

Conditions associated with oxidative damage

- Atherosclerosis
- Cancer
- Pulmonary dysfunction
- Cataracts
- Arthritis and inflammatory diseases
- Diabetes
- Shock, trauma, and ischemia
- Renal disease and hemodialysis
- Multiple sclerosis
- Pancreatitis
- Inflammatory bowel disease and colitis
- Parkinson's disease
- Neonatal lipoprotein oxidation
- Drug reactions
- Skin lesion & Aging

Aging is a biological, degenerative process. It progresses slowly and is much more complicated to be measured quantitatively. Aging results in functional decline of organisms such as physiological functions with time and hence chances of death and disease rate are increased.

The increased rate of life expectancy is a consequence of the availability of treatments and better life quality conditions. Numerous chronic and non-communicable diseases are responsible for disability and death worldwide.

The average life span for a healthy person is 80 years and aging leads to mortality and pathophysiological conditions

Aging theories

Indeed, above 300 theories including many mechanistic and evolutionary theories have been proposed by the scientific community to explain why and how living organisms age and the driving force behind aging, but not even a single theory has been proved to be universally applicative. For instance, according to the "somatic mutation" theory, somatic mutation and increased DNA damage largely account for aging, while "telomere loss" theory suggests that with age cellular division capacity associated with progressive telomeres shortening in somatic tissues is decreased. However, the "altered proteins and waste accumulation" theory postulates about association of certain factors with some age-linked ailments, like protein turnover being indispensable to conserve cellular function and accumulation of altered proteins and damaged proteins over time.

Hence, it is considered from all aging theories, from programmed cell death to 'wear-and-tear', that ROS (reactive oxygen species) or free radicals account for age development.

Oxidative stress

Oxidative damage means the accumulation of free radicals due to free radical's over-production that cannot be processed gradually or because of less availability of antioxidants. It leads to a wide range of random and indiscriminate biomolecular damage. Term "oxidative stress" was first used in the 1970s & 1980s, for various deleterious processes. However, it was later defined as antioxidants and oxidants imbalance in favor of the oxidants, which potentially leads to deterioration as shown in [figure](#). Oxidative stress occurs when the antioxidant buffering capacity is less than the production of pro-oxidant compounds such as ROS.

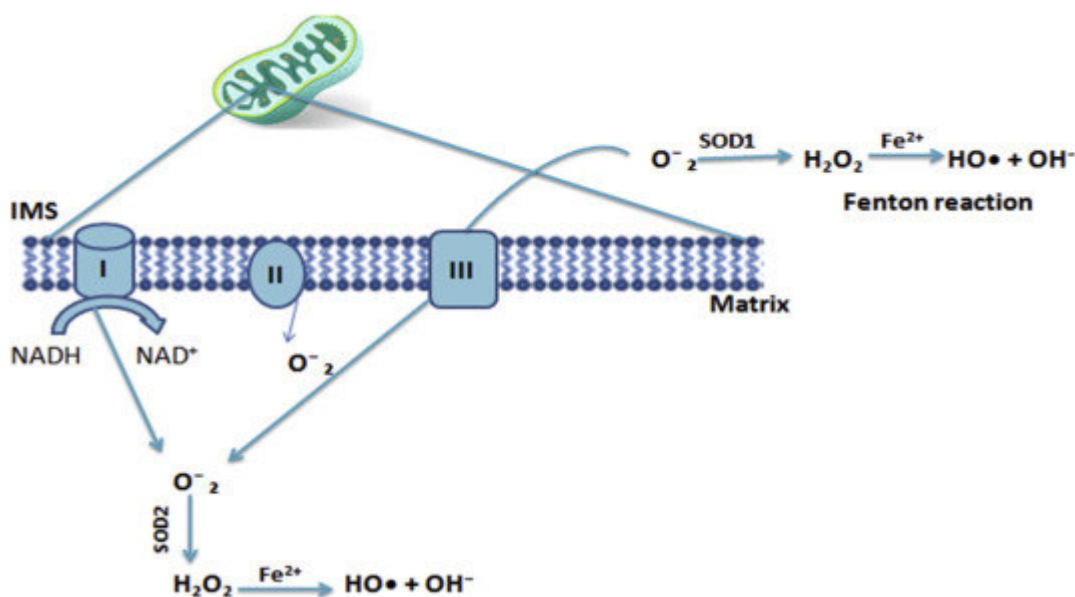
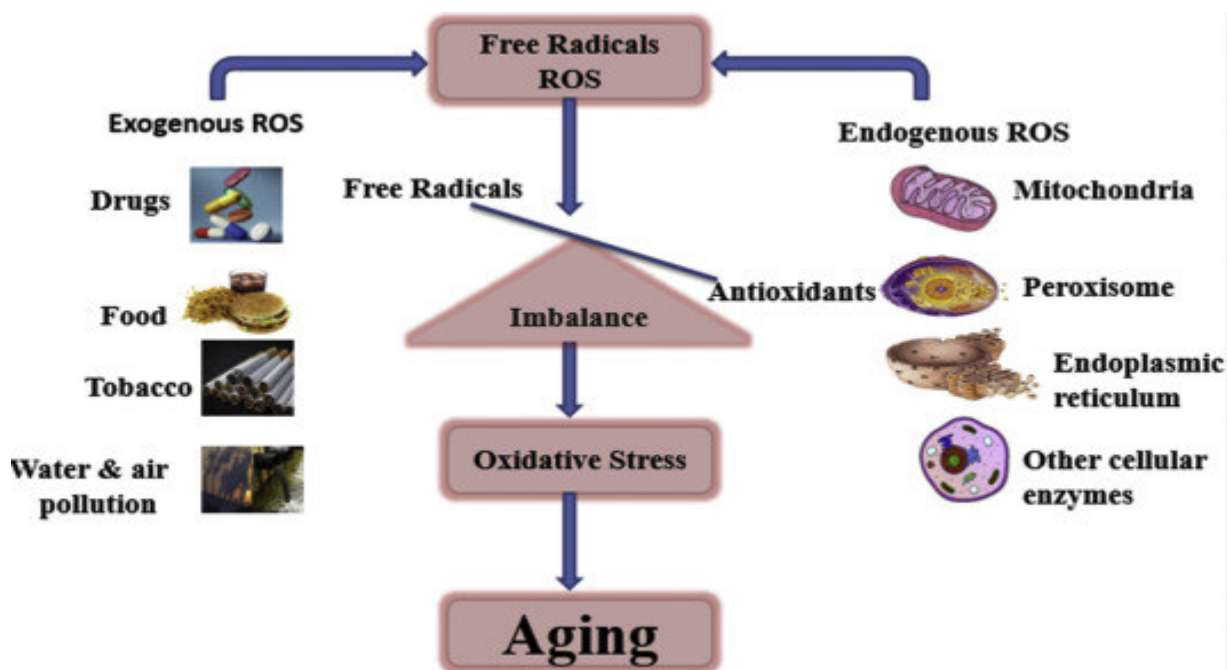


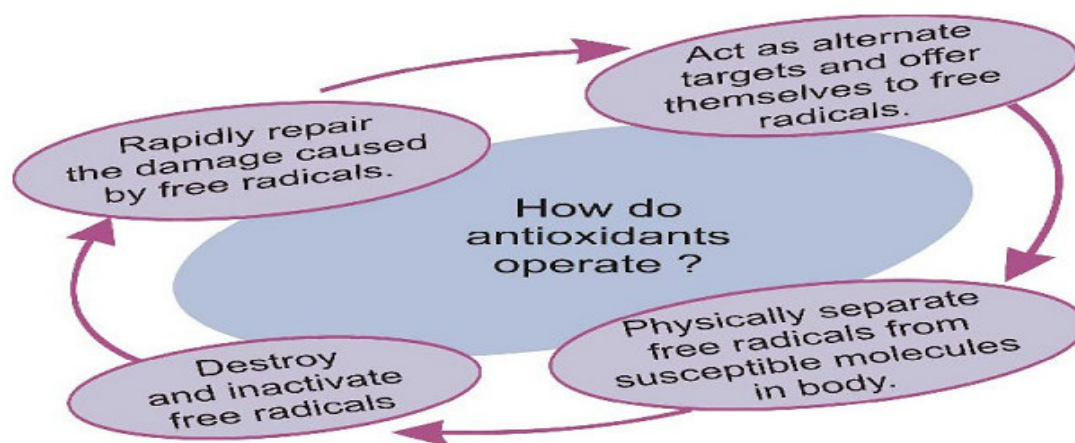
Figure 1. Generation of ROS in the electron transport chain through complex

What Are Antioxidants?

Antioxidants are found in many foods. They work to keep our cells healthy by protecting them from damage by free radicals (molecules responsible for aging, tissue damage, and some disease). Free radicals damage cells in a process called oxidation. Oxidation results from everyday body functions such as breathing or walking, but certain processed and fatty foods, toxic substances, and sunlight can

increase its effects. Antioxidants help repair damaged cells, which can prevent diseases, including cancer. A diet rich in a variety of plant-based foods provides all of the antioxidants the body needs. Research shows that vitamins, minerals, and phytochemicals from whole foods interact to boost their disease-fighting effects. These nutrients benefit both healthy people and those fighting disease. This is why it is important to focus on eating nutrient-rich foods rather than focusing on a single nutrient in supplement form.

How do antioxidants operate ?



Natural antioxidants to neutralize free radicals

To protect the cells and organ systems of the body against reactive oxygen species, humans have evolved a highly sophisticated and complex antioxidant protection system. It involves a variety of components, both endogenous and exogenous in origin, that function interactively and synergistically to neutralize free radicals.

Clinical study reports of astaxanthin in astashine capsules

Clinical studies has shown that Astashine capsules has the strongest quenching effect againstsinglet oxygen, and a strong scavenging effect against free radicals.Astaxanthin was found to be at least 10 times stronger antioxidant thanzeaxanthin, lutein, tunaxanthin, canthaxanthin, and beta-carotene, and 100times stronger than Vitamin E.

<u>Supplement</u>	<u>How many times Weaker than Astaxanthin</u>	<u>How many mg to equal 4mg of Astaxanthin</u>
Astaxanthin		
Alpha Lipoic Acid	75 times weaker	300 mg
Green Tea Catechins	550 times weaker	2200 mg
CoQ10	800 times weaker	3200 mg
Vitamin C	6000 times weaker	24,000 mg

Fig.3

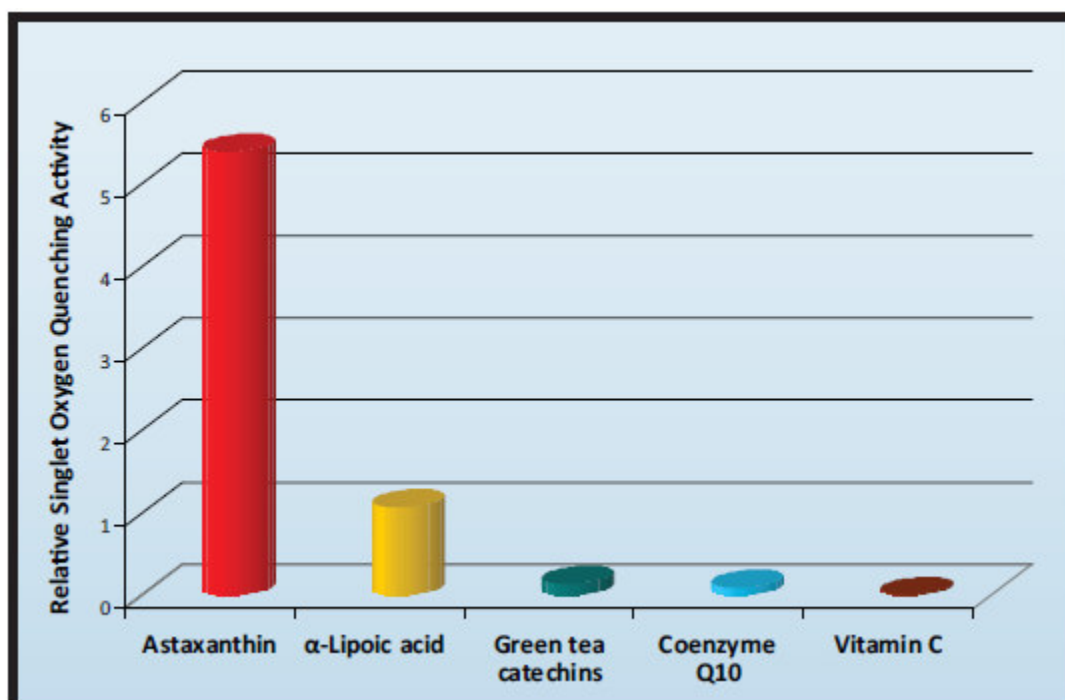


Fig.4

Astaxanthin is a potent antioxidant nutrient with a wide variety of health benefits. Three recent studies demonstrate excellent anti-aging potential, especially to help preserve the efficiency of energy production during aging.

Mitochondria are cell's Power house. They need to function well in order to maintain efficient energy production, especially to offset the common decline in mitochondrial function that occurs during aging. Astaxanthin improves mitochondrial status and decreases the levels of nitric oxide that is linked to inflammatory states in the circulation. Under the influence of astaxanthin, not only did mitochondria Organelle function better, they grew in physical size and demonstrated superior enzyme activity. When mitochondria grow in size, a process called mitochondrial biogenesis is taking place, a key anti-aging event that is helping body energy production become more youthful. [1]

Another study looked at the ability of bovine embryos to maintain normal growth and development under varying levels of heat stress. After disruptive stress was induced upon the embryos, astaxanthin was provided to the embryos, which recovered their normal function and growth pattern. Astaxanthin specifically localized with the mitochondria, rejuvenating normal energy production capability. [2]

In Another study, Japanese researchers from the Department of Aging Control, Juntendo University, provided doses of either 6 mg or 12 mg per day of astaxanthin in a randomized, double-blind, placebo-controlled study to test cognitive function in middle aged and elderly patients. Over a 12-week period both groups improved on learning tests, and the 12 mg per day group improved on cognitive testing. The researchers concluded that astaxanthin "improves cognitive function in the healthy aged individuals." Of course, the brain requires efficient mitochondrial energy production in order to perform and is also helped by a reduction in free radical damage – two of the key mechanisms of astaxanthin benefit. Astaxanthin makes

sense as part of an anti-aging nutritional program wherein a variety of nutrients help reduce free radical damage and excess inflammation while helping to improve the efficiency of energetic function. [3]

Safety of astashine 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 creatinekinase ($p \leq 0.01$), although all three values remained within normal range. Also, astaxanthin significantly lowered the liver enzyme gamma-glutamyltranspeptidase (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.

Suggested dosage

The doses of astaxanthin used in clinical trials have ranged from 1 mg/day to 40 mg/day (with the majority in the 6-12 mg range); single-dose pharmacokinetic studies used up to 100 mg per dose. As a dietary supplement, astaxanthin should be taken along with fats, with or immediately prior to meals, to ensure its optimal absorption.

SUMMARY AND CONCLUSION

Astaxanthin,s antioxidant activity has been demonstrated in several studies. In some cases, astaxanthin has up to several-

fold stronger free radical antioxidant activity than vitamin E and b-carotene. The antioxidant properties of astaxanthin are believed to have a key role in several other properties such as protection against UV-light photooxidation,

inflammation, cancer, ulcer, *Helicobacter pylori* infection, aging and age-related diseases, or the promotion of the immune response, liver function and heart, eye, joint and prostate health.

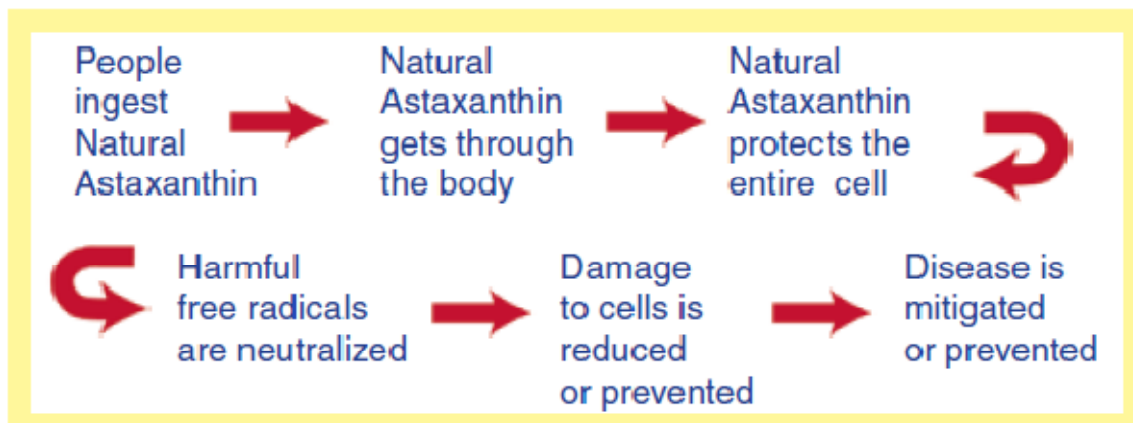


Fig.5

Antioxidant-antiageing diet chart

Early morning: (6:00-7:00am)

- Luke warm water
- ❖ Physical activity 1hr to 2hrs
- ❖ Green tea
- ❖ Soaked almonds-4

Breakfast: Before (9:00am)

- Idly-3, dosa-2, broken wheat upma-1cup+ chutney
- Ragi dosa-2, wheat dosa-2, green gram dosa-2, multigrain dosa-2+chutney
- Ragi malt-1cup, multi grain malt-1cup
- chapathi-2 + veg curry,
- veg salad/fruit salad-1cup + sprouts-1cup + brown bread or multi grain bread-2slice
- oats upma-1cup, oats dosa-2
- sandwich (whole wheat bread or multi grain bread) + veg stuff or chicken stuff (No sauce, No ketchup, No mayonnaise, No cheese)

To be avoided: deep fried items.

Mid morning: (11:00-11:30AM)

- Dark chocolate
- Veg salad (carrot, garlic, onion, cabbage, spinach, beans, broccoli)
- Fruit salad (strawberries, blue berries, apple, tomato, orange, kiwi, avocado, grapes)
- Sprouts
- Nuts
- Green tea or lemon tea
- Dry fruits

Lunch: (1:00-2:00pm)

- Brown rice-1cup + veg curry (paneer, tofu, rajma, mushroom, palak, tomato, soya chunks) or chicken breast-50g + green leafy veg dhal or veg dhal-1cup + curd or yogurt-1cup+egg-1

- Millet meal + veg curry or chicken curry-50g + green leafy veg dhal-1cup+ curd or yogurt -1cup+ egg-1
- Roti-2 + veg curry or chicken breast + curd or yogurt-1cup+ egg-1

Note

- ❖ Green leafy veg weekly twice
- ❖ Non veg weekly twice
- ❖ Avoid fried curries

Snacks: (4:00-5:00pm)

- Repeat mid morning snacks
- Sunflower seeds, pumpkin seeds, watermelon seeds, sesame seeds, almonds, cashew, pista, chironji, peas.

Dinner: (8:00-9:00) if possible before 8:00pm

- You can repeat breakfast options
- Millet roti-2 + veg curry
- Whole wheat roti-2 + veg curry

To be avoided at night: deep fries.

Bed time meal: optional (before 1hr to sleep)

- Easily digest fruits
- Turmeric milk without sugar

NOTE

- ❖ 6-8L water per day
- ❖ 7-8hrs sleep per day
- ❖ Min 1hr physical activity
- ❖ Add more fruits and vegetables
- ❖ No white sugar
- ❖ No processed foods(biscuits, cookies, baked foods, chips)
- ❖ No sugar drinks(cool drinks)
- ❖ Limit salt
- ❖ Limit spice
- ❖ No deep fries
- ❖ Limit alcohol
- ❖ Avoid fast foods

- ❖ Avoid refined flour and white flour (maida, rice flour)

CONCLUSION

We all are aware of the fact that a high mortality and morbidity rate are attributed to aging. Aging is a global issue as the number of centenarians increasing worldwide. We cannot deny the reality of being aged but we can convert this time-dependent and natural process of aging, into a healthy aging process with Pugos Nutrition, because the number of healthy centenarians is not very high. As environmental parameters also contribute largely to aging so we should pay

attention to regulating the ROS producing environmental factors. Similarly, our diet should be rich in antioxidants such as fresh fruits and vegetables that may help in preserving the equilibrium between oxidants and antioxidants and ultimately healthy aging process.

Recommended Pugos Nutrition Supplements

ASTASHINE CAPSULES (World's Most powerful Antioxidant), Curcumin capsules, Optigison gold capsules. Nutrease shake also recommended as it contains blend of natural fibres, natural sweetener stevia & perfect nutrition for Antioxidant support.

REFERENCES

1. <http://www.wellnessresources.com/studies/astaxanthinmodulatesageassociatedmitochondrialdysfunctioninhealthy>.
2. <http://www.wellnessresources.com/studies/astaxanthinamelioratesheatstressinducedimpairmentofblastocystdevelopment>.
3. <http://www.wellnessresources.com/studies/effectsofastaxanthinoncognitivefunction>.