

Editorial

Colours of Health



The colorful vegetables and fruits like beet, carrot, tomato, squash, spinach, orange, ladies finger, peanuts, broccoli, lettuce, mint (pudinah) etc. add extra attention to our dishes or create visifeast effect; colorful vegetables are enriched with caroteneides, which are coloring agents of tarpinoids family and responsible for attractive colors of these vegetables.

Caroteneides

These biopigments are soluble in oil or fat. 50-60 types of caroteneides have been detected so far. Human serum contains 22 types of caroteneides, alpha, beta, gama, etc. Only 10% caroteneides may convert to vitamin A or may have pro vitamin A activity. Interestingly, most caroteneides are found in nature in groups and their presence in group boosts their functionality. For instance, team working of beta and gama, with alpha group asthaxanthin with lycopin or beta carotene with lycopin increases the functionality as well as brightness of color.

Chemistry of caroteneides

It protects cell and cell membranes from the devastating action of free radicals. In fact, it even more efficiently protects from oxyradicals than vitamin E. Vitamin E can not remove the free radicals out of our body which the caroteneides can do in various ways.

As per their colors caroteneides are divided broadly in three groups; orange, yellow or green, and red caroteneides.

Orange

Alpha, beta, gama and zeta are of this group. Carrot, spinach, apricot, sweet-red potato, ripe pumpkin, ripe papaya, yellow corn, apple, peach, ladies finger, peas, squash, various green leafy vegetables etc. are rich in orange caroteneides.

Yellow-green

Lutein, zexanthin, alpha and beta cryptoxanthin are of this group. Orange, lettuce, spinach, squash, fig, mustard leaves, coriander leaves, margosa leaves, gram leaves, arum leave stalks, horse radish leaves, buck wheat leaves, ripe papaya, peach, corn, capsicum, carrot and ripe pumpkin etc. are rich sources of yellow-green caroteneides.

Red

Lycopin and asthaxanthin are of this group. Tomato is the richest source of lycopin, besides tomato, watermelon, arum leave stalks (red or brown variety) blood orange, pink grapefruit, red chilies, capsicum are sources of red caroteneides.

Various sea fish, algae and other sea plants, crabs and prawns are rich in asthaxanthin.

Absorption of caroteneids

Tomato is more absorbed in cooked form than in salads. Alike alpha, beta and gama, orange caroteneides are converted to retinyle ester and deposited for future needs.

Daily requirements

As antioxidant and preventive for diseases, adults need 4800-6000 microgram and children need 2400-4200 microgram caroteneides daily.

To cure diseases

Caroteneides help to protect and maintain the cell membrane and its internal structure. They prevent free radicals from entering the cells, thus protecting the genetic codes and their unique characteristics; they even regulate protein synthesis and repair the damaged DNAs. It has been observed that red and orange caroteneides together work faster and more securely to repair the damages to the DNAs. Zinc and vitamins like vitamin B3 or Niacin balance the workload between the red and orange caroteneides.

Prevention of cancer

Caroteneides help the normal functioning of connexin-43 gene and protect the sensitivity between the cells, thus preventing morbid growth. Scientists at Harvard University opined that lycopin enriched foods help to cure prostate cancer. In addition, breast, cervical, colon, rectum, endometrium, esophagus, pancreas, lungs and stomach cancer could be prevented by regular intake of asthaxanthin , alphacarotene, leutein and lycopin enriched food. Hence, our regular dishes should consist of fresh green leafy vegetables, fresh lime, spinach, lettuce, buck wheat leaves, bottle gourd, pumpkin, mustard, radish, carrot, cabbage, broccoli, peas, papaya, squash, orange, guava, etc.

Sea foods like sea fishes, crab, prawn, etc. should also be added to our regular dishes for prevention of cancer of breast and uterus.

Cardio-vascular disease

The lycopin from tomato lowers the LDL or low density lipoprotein or bad cholesterol in our blood, and prevents oxidative damage by protecting from deposit of bad cholesterol in our arterial walls. Arguably, orange coloured beta carotenes are more effective than lycopin in lowering LDL and serum lipid. Vitamins A, B12, C, and E also have roles in prevention of cardio vascular diseases.

Macular degradation and cataract

Caroteneides like lutein and zeaxanthin help strengthen macula, the inner central portion of retina. Lutein and zeaxanthin prevent photooxydation of the eye lenses and reduce the risk of cataract, macular degeneration and degenerative retinal disorders. Carrot, collards, spinach, grape, jambol (syzygium jambolanum), orange, squash, yellow corn, wheat and yolk of egg are rich sources of these caroteneides. Vitamins A, C, and E are also necessary for maintaining good health of retina. The two natural beta carotenes, lutein and xeaxanthin are found in carrot.

According to the Journal of the American Medical Association, or JAMA, lutein and xeaxanthin form the yellow pigments of the macula. The macula, or the yellow spot in the centre of the retina in the human eye, is the place with the highest visual activity. These pigments can deteriorate with age, leading to visual impairment in the elderly.

A report published in the American Journal of Clinical Nutrition says lutein and xeaxanthin have the strongest protective effect against AMD. This is supplemented by a finding reported in Landrum et al. which says the effect of 140 days of lutein supplement produced a 30 to 40 per cent reduction in the AMD. Exposure to a high-intensity light source such as sunlight causes temporary blindness and blurring of vision. In order to protect the retina from permanent damage, lutein and xeaxanthin get secreted in the retina. They then undergo oxidation and eventually the eyesight is restored. Lutein and xeaxanthin, natural beta-carotene, carotenoids and other micronutrients act as antioxidants and may play an important role in reducing free radical damage to the eyes and in turn may prevent cataract or control its progression.

Sun damage or photo sensitivity

Sun burns could be cured by orange and red caroteneides together with vitamin E. A mixture of caroteneides and vitamin E could well be a possibility of next generation fairness cream.

Cognitive function

With age our memory weakens and concentration power reduces together with reflexes in other senses due to degeneration of brain cells. Regular intake of beta carotene enriched foods could effectively prevent such conditions like, Alzheimer's disease, also boosts memory in students.

In healing wounds

For surgical healings supplements of caroteneides with vitamins C and E are prescribed.

Immunity Booster

Researchers at Minnesota University opined that asthaxanthin is more effective than other caroteneides in prevention of autoimmune diseases. Sea plants and algae, sea animals including fishes help the production of thymus cells in our body resulting in production of antibodies and prevention of diseases and boost our immune system. Japanese scientists ore of the view that asthaxanthin helps secretion of cytokine from T-cell or thymus cell which promotes immune response. Similarly, orange caroteneides especially alpha and beta carotenes promote secretion of immune stimulating compounds like interleukin-I and boost immunity.

Various bodily processes like metabolism, respiration, excretion, etc. produce free radicals, stress, strain, environmental pollution , fast lifestyle and changing food habits contribute towards production of more free radicals in our body. These free radicals affect the cell lipids and cell membranes resulting in premature ageing, morbid growths or so called incurable diseases.

The key to our good health thus lies in regular intake of colourful vegetables and fruits besides sea fishes, crabs and prawns, algae and sea plants.

Dr.Debasish Kundu

Vice President of American Nutritional Medical Association, P.O.Box 66005, California 95206, U.S.A., Phone: 209-464-3884 Fax.209-954-2838, and a Visiting Professor of Khulna Homeopathic Medical College and Hospital, Khulna 9100, Bangladeshe-mail: drdkundu@hotmail.com
