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# REDUCE SALT CONSUMPTION FOR HEALTHY NATION



**Industry needs to maintain an active dialogue with academia on the education and training**

- Dr Colin Dennis, President IFT, Chicago, USA

**Dr Sanjay Agrawal**
Leading Pharmaceutical Consultants & Inventor

# Lycopene antioxidant helps to fight against many life threatening diseases

Lycopene is a naturally occurring antioxidant available in many ripe fruits such as tomatoes (the major source of the carotenoid antioxidant lycopene which helps for lowering the risk of cancer), watermelon, grapes and papayas. It is also found in some type of shell fish and vegetables such as apricots, guavas.Lycopene improves fertility in men and it is also known as a red carotenoid pigment, generally found in plants and also present in the blood and certaintissues of animals.

Lycopene is very useful in the management of carcinoma of prostate gland and it offers protection from myocardial ischaemia, atherosclerosis, ventricular arrhythmias and cerebral ischaemia.

The main source of lycopene is tomato, which contains approximately 80% of lycopene. Compared to tomato, lycopenes presence in guava, watermelon and pink grapefruit are very small amounts. Lycopene protects plants from light-related stress and helps them use the energy of the sun to make nutrients.

Lycopene is a red carotenoid-pigment found predominantly in tomatoes and also in some other fruits that gives them their colours, and having many antioxidant properties. It helpsto promote a healthy heart and to reduce the risk of cancer.

According to studies conducted by various institutes across the globe, lycopene has been found to inhibit proliferation of several types of cancer cells, including those of breast, lung, prostate and endometrium and it reduces the risk of exercise-induced asthma in some patients. The studies suggest a combination of low concentrations of lycopene with dihydroxy vitamin D3 exhibit a synergistic effect on cell proliferation, differentiation and an additive effect on cell cycle progression.

This synergistic anti-proliferative and differentiating effects of lycopene and other compounds found in the diet and in plasma (colourless watery fluid of blood and lymph containing no cells and in which erythrocytes and leukocytes and platelets are suspended) suggest the inclusion of the carotenoid in the diet or dietary supplementation as a cancer preventive measure.

Dietary supplementation of lycopene results significant increase in serum lycopene level and diminish amount of serum thiobarbituric acid reactive substances. There are indications that the lycopene levels increase in a dose dependent manner in the case of spaghetti sauce and tomato oleoresin. These are indicating that lycopene is readily absorbed from tomato products and may act as an in vivo anti-oxidant and plays very important role for preventing various types of cancers.

Recent research shows addition of lycopene along with dietary fat may helpthebody absorb them. For example, more lycopene was absorbed from tomato cubes cooked with olive oil than tomato cubes cooked without olive oil.

The researchers suggest that lycopene, in addition to its ability to attack free radicals, may also reduce inflammation and cholesterol and improving immune system of human body function and preventing the blood clot.It is also one of the free radical-fighting antioxidants. Free radicals are damaging molecules that float around in the body disrupting cells and promoting disease. Antioxidants like lycopene destroy free radicals.All of these abilities of lycopene will help to reduce ischemic strokes caused by clot-caused blockages in blood flow to the brain.

Other studies of lycopene have shown that prostate cancer cells treated with lycopene changes their cell division cycle and leading to less cancer cell growth. In prostate cancer cells treated with lycopene, cholesterol levels were lower, leading to less cancer cell growth and more cancer cell damage. Treating prostate cancer cells with lycopene may change the way androgen (a male sex hormone) is taken up and used in the cells, causing less cancer cell growth. Combining lycopene with standard cancer drugs may help for stopping the spread of various types of prostate cancer cells more than when drugs are used alone. Using together with a cancer drug, lycopene may block the way insulin like growth factor is taken up by the cells and causing very less cancer cell spreading.

Research done by a team of Finnish researchers has linked lycopene levels in the blood to stroke protection.The researchers made this connection after following more than a thousand middle-aged men group for 12 years. The men with the greatest amounts of lycopene in their blood had about 55% lower chance of having any type of stroke. The lycopene connection

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was even stronger (59%) when it came to protecting against strokes due to blood clots (the most common kind). The finding came as a surprise - the researchers initially wanted to know if other antioxidants such as alpha carotene, beta carotene, Vitamin A and Vitamin E affected strokes, but they concluded it did not.

There is also some evidence that cancers of the pancreas, colon and rectum, esophagus, oral cavity, and cervix could be reduced with increased lycopene consumption. This antioxidant helps to reduce risk of developing cardiovascular disease by reducing LDL (bad) cholesterol and lowering blood pressure.

## Studies on animal

Clinical trials conducted on animals of prostate cancer treated with lycopene have shownstrains of mice created to develop prostate cancer that actslike human cancer were fed a diet with either lycopene beadlets or tomato pastes. Mice on dietary supplementation with lycopene beadlets had greater decrease in prostate cancer ratethan mice on the tomato pastes diet. This shows that lycopene might have more cancer protective effects than tomato pastes.

According to studies conducted by Harvard Medical School and Research, the mice injected with human prostate cancer cells showed that mice treated with either lycopene or beta carotene diet supplements had less tumour growth. And the mice injected with human prostate cancer cells and treated with a certain chemotherapy drug, lycopene, or both, showed that those treated with chemotherapy and lycopene lived longer and had smaller tumours than those treated with chemotherapy alone.

## Studies on human

Clinical trial studies conducted on human look for risk factors and ways to control disease in large groups of people. Human clinical studies of prostate cancer risk have shown in men have found that high amounts of lycopene in the diet are linked with a lower risk of developing prostate cancer. Some studies have shown that lycopene levels in the blood and cells/tissues of patients with cancer are lower than in those who do not have cancer, according to Harvard Medical School and Research.

A review of many clinical trial studies combined shows that men who ate large amount of raw or cooked tomatoes may have a slightly lower risk of prostate cancer. Another study found no link between lycopene and tomatoes in the diet and prostate cancer risk in the overall population. However, in men with a family history of the prostate cancer, higher amounts of lycopene in the diet were linked with a lower risk of prostate cancer. Another study in the same group of men found no difference in blood levels of lycopene between healthy men and men who developed prostate cancer, according to the study conducted by the Harvard Medical School and Research. NS