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Memorial Sloan Kettering
Cancer Center

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Diets that contain fruits and vegetables rich in carotenoids like lycopene can help prevent some types of cancers and heart problems. However, benefits of lycopene supplements are unclear.

Lycopene is a natural pigment that is produced by plants and microorganisms. Lab experiments confirm that it acts as an antioxidant and affects the way cells grow and communicate with each other. Scientists have proposed several different mechanisms by which lycopene might fight cancer. These include stopping cancer cell growth, preventing DNA damage, and enhancing enzymes that break down cancer-causing products.

Studies in healthy elderly patients suggest that consuming lycopene or tomato juice does not stimulate the immune system. In general, diets rich in carotenoids like lycopene have been associated with decreased risk of macular degeneration, cataracts, and some types of cancers and heart problems.

What are the potential uses and benefits?

- To prevent and treat cancer

Lycopene is an antioxidant. One clinical trial suggests that preventative use of lycopene supplements may reduce the spread of localized prostate cancer, but there is no other proof from clinical trials that lycopene can treat cancer. Diets rich in carotenoids like lycopene are generally associated with a decreased risk of certain types of cancers.

- To treat asthma

One clinical trial showed that daily lycopene supplementation protected against exercise-induced asthma, but no additional studies have been performed to confirm this.

- To treat heart disease

Diets rich in carotenoids like lycopene are generally associated with a decreased risk of some cardiovascular events. However, there is no evidence showing that lycopene supplements have the same effect.

- To prevent and treat macular degeneration

Diets rich in carotenoids like lycopene are generally associated with a decreased risk of macular degeneration. However, there is no evidence showing that lycopene supplements have the same effect.

What are the side effects?

- After long-term ingestion of large quantities of lycopene-rich foods like tomato products, orange skin discoloration may develop in some individuals.
- A possible interaction between high-dose lycopene and chronic alcohol consumption was shown in an animal model. Clinical relevance is not known.

What else do I need to know?

Special Point:

An analysis of six commercially available brands revealed that lycopene content varied from the labeled dosage by as much as 43%.

If you have any questions, contact a member of your care team directly. If you're a patient at MSK and you need to reach a provider after 5 p.m., during the weekend, or on a holiday, call 212-639-2000.

For more resources, visit www.mskcc.org/pe to search our virtual library.

Lycopene - Last updated on May 6, 2022

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