

## Supplement Sampler

### Lycopene – Why ketchup may be good for you

#### Best Indications

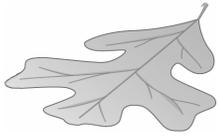
- Increasing rate of HPV clearance
- Oral leukoplakia
- Cancer prevention. Studies (mostly epidemiological) show decreased ovarian, pancreatic, lung, and prostate cancer risk. Bladder and colon cancer risk are not affected. Breast cancer data is varied regarding benefit.

#### Mechanism of Action

- Lycopene is the pigment that gives many fruits and veggies their red color.
- Though it is the most potent antioxidant of any carotenoid, lycopene doesn't have vitamin A activity.
- Most foods contain it as the *trans*- isomer, which is less bioavailable, but heat processing (which occurs when tomatoes are made into paste or ketchup, for example) changes it to the *cis*- form, which digests better. Thus lycopene in cooked tomatoes is better absorbed.
- It has been confirmed that eating processed tomato foods does indeed increase serum lycopene levels.
- Lycopene inhibits LDL oxidation in vitro and is actually transported through the blood on LDL particles.
- Tomato consumption up-regulates tumor suppressor gene expression in the prostate, but taking lycopene alone does not.

#### Best Studies

- A group of 84 women with confirmed HPV infection were followed at baseline and at 4 and 10 months. 15 oncogenic HPV types were assessed. Likelihood of clearing an infection was significantly higher for both *trans*-lycopene (p value for trend 0.025) and for *cis* (0.010). This represented an overall average clearance of 8.5 months as opposed to 11-12 months. *Sedjo RL, et al. Cancer Causes Control. 2003 May;14(4):319-26.*
- In groups of roughly 47,000 men and 77,300 women, there were 894 cases of lung cancer that arose during a 10 year cohort study. Compiled data from 2 cohort studies of lung cancer found that carotenoid intake (from consumption of fruits and vegetables) lowered relative risk of lung cancer of 0.68 (CI 0.49-0.94). Associations were strongest 4-8 years after dietary evaluation was performed. Dietary lycopene itself was linked to a reduced risk. Interestingly, the relative risk was clear down to 0.37 (CI 0.18-0.77) in non-smokers when the highest intake and lowest-intake quintiles were compared. *Michaud DS, et al. Am J Clin Nutr. 2001 Aug;74(2):273-4.*
- 58 patients with oral leukoplakia were given lycopene supplements at doses of either 4 mg or 8 mg a day. Clinical and histological assessments indicated that the higher dose group had a mean improvement (based on study criteria) of 80%, lower dose group 66% and placebo group 13%. *Singh M, et al. Oral Oncol 2004;40:591-6.*



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## Lycopene

### Dose

- Doses ranging from 4 mg daily to 15 mg twice daily have been used.
- The leukoplakia study used a product called LycoRed in 4 mg or 8 mg daily doses.
- A cup of tomato juice has 23 mg.

### Side Effects

- None known. Studies going out 8 weeks with lycopene supplements have shown no problems.
- It is suggested that pregnant women limit dosing to dietary intake levels.

### Cost

- Variable, but you can obtain 60 tabs (15 mg) online in the \$6-20 range.

### Comments

This is a great example of the number of factors that influence a supplement's efficacy. Most data (the oral leukoplakia study is an interesting exception) are for foods containing processed tomatoes.

In addition to ketchup, you can find lycopene in pink grapefruit, watermelon, guava, and apricots (but remember it is probably in the trans form).

### Clinical Bottom Line

Many potential benefits in epidemiological and in vitro studies. Consider it in patients with concerning pap smear results or leukoplakia. Probably best to obtain this supplement in foods if possible. Remind people that 7-8 servings (with a serving being the amount that fits into the palm of your hand) of fruits and vegetables daily is likely to have many health benefits.

A nice review of foods and cancer prevention is available at:  
[http://www.actabiomedica.it/data/2006/2\\_2006/divisi.pdf](http://www.actabiomedica.it/data/2006/2_2006/divisi.pdf).

*Brought to you by your colleagues in the UW Department of Family Medicine Integrative Medicine Program.*

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