

# A Tomato a Day May Keep Cardiologists Away

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**N**EW YORK — The buzzword of a few years ago was beta carotene, a substance found in fruits and vegetables that was supposed to protect against cancer. Then scientific studies showed no particular benefit from taking beta carotene in pill form. In fact, questions were raised about potential harm, especially to smokers. Now it seems another substance in fruits and vegetables may account for the health protection long associated with eating carotene-rich foods.

It is called lycopene and it is what makes tomatoes red. It had previously been strongly linked to a reduced risk of developing various deadly cancers, including those of the prostate, colon and rectum.

A large study of 1,379 European men has indicated that those who consumed the most lycopene from foods were half as likely to suffer a heart attack as those who consumed the least.

Participants in the new study were middle-aged men, 662 of whom had suffered heart attacks.

The study is especially valuable because it assessed lycopene consumption and absorption by measuring its presence in body fat rather than by using a less reliable method of asking men how much lycopene-rich food they regularly consumed.

Like beta carotene, lycopene is fat-soluble. Dietary fat is needed for it to be absorbed through the intestines, and the amount stored in body fat is considered a reliable reflection of how much people absorb from their diets. Lycopene's protective role, however, stems from its ability as a potent antioxidant, which means it can prevent free radical damage to cells, molecules and genes as it circulates in the blood. Free radicals are highly reactive molecules that can combine with other substances and change them in a harmful way.

Such damage can, for example, transform freely circulating cholesterol into a form that sticks to arteries and clogs them, setting the stage for a heart attack. It can cause genetic changes that may in time result in cancer. Free radical damage is also involved in cataracts caused by exposure to sunlight and lung disease caused by inhaling pollution.

Lenore Kohlmeier, a professor of epidemiology and nutrition at the University of North Carolina at Chapel Hill, and her colleagues at 10 European medical centers published the findings in the current issue of *The American Journal of Epidemiology*. They indicate that lycopene is most likely the substance responsible for the protection against heart disease and cancer that had long been thought to result from consuming beta carotene.

Lycopene is most prominent in tomatoes. But it is not well absorbed into the body unless the tomatoes are cooked. Thus, the best sources are concentrated processed tomato products like tomato

paste, ketchup and tomato sauce. Tomato juice is a reasonably good source if it has been heated, as would occur when it is canned or bottled. Other sources of lycopene include watermelon, red grapefruit and, to a lesser extent, shellfish like lobster and crab.

"Once again we have to revise an old recommendation — to eat fresh fruits and vegetables," Dr. Kohlmeier said in an interview. "You get five times more lycopene from tomato sauce as you would get from the equivalent amount of fresh tomatoes." Furthermore, she said, when tomatoes are consumed as part of a processed food, that food is likely to contain some fat that makes it

possible for the lycopene to be absorbed. When the research team simultaneously examined levels in body fat of lycopene, alpha and beta carotene and lutein, another carotenoid, lycopene alone seemed to account for the reduced risk of heart disease.

Dr. Kohlmeier cautioned against assuming, first, that the protection the researchers observed resulted directly from lycopene and not some other as yet unknown nutrient that "travels with lycopene" and, second, that if lycopene is in fact protective, the same benefit can be gained from taking it in pill or powder form, instead of getting it from food.

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