

# Dairy Sugar Linked to Ovarian Cancer

A study suggests that some women eating yogurt and other dairy products may face an increased risk of ovarian cancer, adding another link between diet and malignancies. The surprising findings show elevated risk in women who may have inherited a flawed enzyme that poorly metabolizes a certain dairy sugar — a risk that grows with the amount of dairy products consumed. Researchers say the report is the first to associate dairy products with human ovarian cancer, which will strike an estimated 20,000 U.S. women in 1989.

"We hesitate to make broad public health recommendations on the basis of the first and only finding related to dairy

products," says lead author Daniel W. Cramer of Brigham and Women's Hospital and Harvard Medical School in Boston. Cramer adds that if others confirm these results, avoiding dairy products may help prevent ovarian cancer, especially in women who inherit the flawed enzyme.

In the meantime, cancer experts say people should interpret the study with caution. "These results have to be validated by other studies before you can decide whether public health action should be taken," comments Lawrence Garfinkel of the American Cancer Society in New York City. "I don't think people should stop eating yogurt or cottage cheese because of this one study."

Cramer and his colleagues asked 235 women with ovarian cancer and 239 healthy controls to recall how frequently they consumed 11 dairy products, including milk, ice cream, yogurt and various cheeses, during the previous five years. They found that women who ate yogurt at least once a month were nearly twice as likely to develop ovarian cancer as women who reported less frequent yogurt consumption. Eating cottage cheese at least once a month also elevated the risk of ovarian cancer, the team reports in the July 8 LANCET.

The study implicates a type of dairy sugar called galactose as a dietary risk factor for ovarian cancer in some women. Galactose forms in the small intestine when people consume dairy products containing the milk sugar lactose. Both yogurt and cottage cheese contain already-formed galactose because their production requires a bacterium that partially digests lactose to free its galactose component, Cramer notes. Previous animal research hints that galactose may contribute to a process leading to ovarian cancer, he adds.

The new findings indicate some women are genetically predisposed to ovarian cancer because they produce a flawed version of galactose-1-phosphate uridylyltransferase, the enzyme that metabolizes galactose. Cramer's research suggests women who have a sluggish version of this key enzyme may have potentially toxic galactose bathing their ovaries for longer than women who metabolize the sugar efficiently.

When the researchers took blood samples and measured enzyme activity in a subset of the study group, they found the women with ovarian cancer were more likely than controls to be deficient in their ability to metabolize galactose. The researchers say a variable that measured both dairy consumption and enzyme activity yielded a "potent predictor" of ovarian cancer risk. Women who consumed more dairy products than they could metabolize had the greatest risk of ovarian cancer.

For scientists, this report hints at the way diet can contribute to the development of cancer at a cellular level. "This is a very interesting article that should be wholeheartedly pursued," says Herbert F. Pierson of the National Cancer Institute. Galactose and other sugars are components of glycoproteins, molecules that may help prevent unrestrained cell growth, he says. Pierson speculates that a defect in galactose metabolism could alter the crucial process of building glycoproteins and thus eventually lead to cancer.

— K.A. Fackelmann

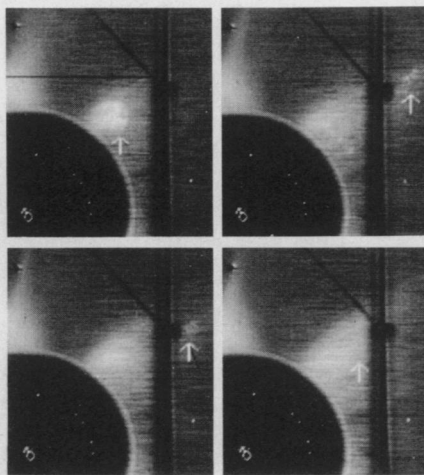
## Solar prominence heads back to the sun

Many physicists have believed that when solar prominences — masses of gas suspended over the sun's surface — leap into space, the ones stretching out by more than about half the sun's 700,000-mile radius either detach and keep going, or else simply disappear. The only solar prominences scientists observe consistently falling back again extend little more than a tenth of a solar radius. But on June 20, an instrument aboard the Solar Maximum Mission satellite took a series of photos showing a prominence that rose nearly 2 million miles, about 2.5 solar radii from the sun's edge, and then headed back down.

Until that day, none of the several hundred extended prominences photographed over nine years by Solar Max's coronagraph/polarimeter had been seen returning, says the instrument's chief experimenter, Arthur J. Hundhausen of the National Center for Atmospheric Research in Boulder, Colo.

"None of the people I've talked to can remember seeing a prominence that has erupted more than about half a solar radius do this before," says Solar Max project scientist Joseph B. Gurman of NASA's Goddard Space Flight Center in Greenbelt, Md. "Before, whenever we saw an eruptive prominence, we'd usually see it continue outward or else just dissolve. That's the classic ground-based observation of an eruptive prominence."

If the plasma that is the stuff of a prominence gets hot enough, it will no longer emit the hydrogen-alpha light that makes it visible, says David M. Rust of the Johns Hopkins University Applied Physics Laboratory in Laurel, Md. The sun's magnetic field lines apparently hold prominences in place, and



Solar Max photographed this unusual solar prominence (arrow) as it left the sun, reached out nearly 2 million miles into space and then headed back again.

Rust suggests that if the field lines containing a prominence "unravel," this may allow hot electrons of the surrounding plasma to ionize the neutral hydrogen atoms of the prominence itself, thus making the prominence invisible to Solar Max.

Rust notes that it seems to take an unusually "tight" magnetic field to contain a prominence long enough for it to extend as far as did the June 20 event and still remain visible as some of its hydrogen-alpha-glowing material starts back down.

Solar Max's more recent observations include the July 8 discovery of its ninth "sun-grazing" comet, which apparently passed so close to the solar disk that it never emerged on the other side. Scientists think the comet may have vaporized in the sun's heat.

— J. Eberhart

Hundhausen/NCAR