Antioxidant vitamins fail to prevent polyps

Antioxidant vitamins have received a lot of attention for their putative role as anticancer agents. Last spring, however, the antioxidant story became complicated when researchers reported that such vitamins did not protect men who smoked from getting lung cancer. This week, another scientific team weighs in on the question of whether antioxidant vitamins shield against colorectal cancer.

Epidemiologist E. Robert Greenberg of Dartmouth Medical School in Hanover, N.H., and his colleagues report that certain antioxidant vitamins offer no defense against developing a wartlike growth called a polyp in the large intestine or rectum. This type of polyp is a precursor of invasive colorectal cancer.

The researchers studied men and women who had already had one such growth removed and thus faced a higher than average chance of developing another polyp and colorectal cancer. They randomly assigned the volunteers, who had very similar diets at the study's start, to one of four groups. Those in the control group received a placebo capsule each day containing an inactive substance. The three treatment groups received either beta carotene alone, vitamins C and E, or beta carotene plus vitamins C and E. Neither the researchers nor the patients in the study knew who was getting the vitamins and who was taking the placebo.

To monitor the appearance of new growths, the patients underwent a procedure called colonoscopy, in which doctors view the colon through a flexible tube. The researchers discovered that more than a third of the recruits developed polyps during a 3-year period. However, people taking vitamins fared no better than those popping placebos: The rate of occurrence of new polyps was about the same in each of the four groups. Greenberg and his colleagues describe their results in the July 21 NEW ENGLAND JOURNAL OF MEDICINE (NEJM).

"The findings don't provide any support for the idea that taking vitamins will lower your risk of colorectal tumors," Greenberg told SCIENCE NEWS.

Still, even Greenberg acknowledges that the antioxidant story is far from over. Antioxidants neutralize damaging free radicals, molecules that contain an unstable oxygen atom, and thus may prevent cancer. The group's results "don't prove conclusively that vitamins are ineffective," Greenberg points out. "It might be that the study did not last long enough to see an effect."

This study looked only at the ability of antioxidant vitamins to stave off another polyp in people who had already had a growth removed, adds Norman I. Krinsky, an antioxidant researcher at Tufts University School of Medicine in Boston. Giving antioxidants at that point may already be too late, he says. The jury is still out on the question of whether antioxidant vitamins can prevent such growths — or colorectal cancer — in people who have never had them, Krinsky says.

An editorial written by NEJM editors Marcia Angell and Jerome P. Kassirer warns against an "all-or-nothing" interpretation of this study's findings. To prove any kind of scientific theory — such as the antioxidant model of cancer protection — scientists must conduct a number of studies. These trials "should be considered tentative until a body of evidence accumulates pointing in the same direction," they say.

Meanwhile, numerous epidemiological studies show that a diet rich in fresh fruits and vegetables lowers the risk of malignancy, including colon cancer, says Arthur G. Schatzkin of the National Cancer Institute (NCI) in Bethesda, Md. Such a diet contains antioxidant vitamins as well as many other cancer-fighting components, he points out.

Indeed, a study by researchers at Harvard Medical School in Boston suggested that folate, a micronutrient in fresh fruits and leafy vegetables, was the crucial ingredient in protecting people against colorectal cancer (SN: 6/5/93, p.358).

Until the vitamin controversy is sorted out, NCI recommends eating at least five fruits and vegetables per day.

— K.A. Fackelmann

Silicone gel stimulates tumors in mice

Silicone gel breast implants — widely available until the Food and Drug Administration issued a marketing moratorium on them 2 years ago — spark passionate rhetoric. Those who view them as dangerous fault FDA for not requiring rigorous testing earlier, while those who regard the implants as relatively safe chide the naysayers.

The FDA issued its moratorium on the use of the implants after reports linked them to connective-tissue and autoimmune diseases. But earlier this year, a study completed at the Mayo Clinic found little evidence to support that link (SN: 6/18/94, p.389).

Now, a new study says the same silicone gel used in implants causes a rare cancer in genetically susceptible strains of mice. The findings, reported in the July 20 JOURNAL of the NATIONAL CANCER INSTITUTE, confirm that silicone gel injected into the abdomen of certain mice will produce plasmacytomas, or tumors caused by the proliferation of plasma cells in bone and connective tissue.

"Based on the amount of data we now have, extrapolating from the mouse model to the human model is titillating but dangerous," says study coauthor Michael Potter of the National Cancer Institute in Bethesda, Md.

In humans, Potter says, plasma cell cancer appears infrequently. The most common manifestation of a human plasma cell proliferation is monoclonal gammopathy of undetermined significance (MGUS), which produces benign tumors. Potter calls MGUS "an immunological wart" because it isn't usually dangerous; however, MGUS can develop into multiple myeloma, which is.

Multiple myeloma — cancer of bone and marrow plasma cells — accounts for 1 percent of all human cancers. It rarely spreads from bone to other parts of the body and is found most commonly in people between ages 50 and 60.

In mice, however, plasma cell cancer remains in the peritoneal cavity. This distinction makes the authors wary about drawing hasty conclusions. "The tumors in the two species have many similar properties," says Potter, "but they have many dissimilar properties as well. The mouse is not a true model . . . of multiple myeloma, although there are many interesting similarities between the two."

Cindy Pearson, program director of the National Women's Health Network in Washington, D.C., says the study "seems reasonably balanced" but adds that "sometimes rats and mice aren't accurate predictors. But it certainly isn't something we should ignore."

Says Sydney E. Salmon of the University of Arizona College of Medicine in Tucson, "finding a few cases doesn't mean there's a causal relationship. About 1.3 million women have received breast implants, and the incidence of myeloma is in the range of 3 per 100,000 per year. You can then calculate that over a period of 3 to 4 years, 170 women who have silicone breast implants will develop myeloma" unrelated to the implants.

Even so, in an accompanying editorial, Salmon and Robert A. Kyle of the Mayo Clinic in Rochester, Minn., call on women who have received silicone implants and have been diagnosed with MGUS, multiple myeloma, or other monoclonal gammopathies to report their diagnosis to the FDA. If warranted, a proper epidemiological study should be conducted, Salmon says. "I have no doubt some cases will be identified — if nothing else, just on chance alone."

— G. Marino