

Caffeine, conception: No correlation

Contrary to previous reports linking women's caffeine consumption with delays in conception, a new epidemiologic study finds no such correlation, except perhaps in the case of tea. On average, fertile women in the study who drank more than two cups of coffee a day took about the same time to conceive as did those who drank less than one cup a month.

The retrospective study involved two groups of women selected from seven hospitals: 2,817 pregnant women and 1,818 infertile women (defined as not conceiving after one year of unprotected intercourse). The women were asked about their daily intake of regular or decaffeinated coffee and tea, as well as weekly consumption of cola. In addition, researchers gathered data on conception-related factors such as age, cigarette smoking and number of previous pregnancies.

When epidemiologists at the Centers for Disease Control (CDC) in Atlanta analyzed the data, they found that conception delays did not increase with caffeine consumption, says CDC's M. Riduan Joesoef. Regardless of caffeine history, the average time taken to conceive was 4.5 months and the median time was 2 months. Joesoef speculates that the one seeming exception to this rule—tea—may somehow exert an effect through its tannic acid content. The data, reported in the Jan. 20 *LANCET*, also show that higher caffeine intake correlates with increasing age, weight, cigarette smoking and alcohol use. In comparing the fertile and infertile groups, the researchers found no link between caffeine and inability to conceive.

Smoking, breast cancer: Jury still out

A growing body of evidence indicates that women who smoke cigarettes have lower estrogen levels than those who don't—a hormonal reduction that would appear to help protect premenopausal women against estrogen-dependent breast cancers. Researchers have also noted that women smokers typically begin menopause about one year earlier than non-smokers, and other studies have linked earlier onset of menopause with a reduced risk of breast cancer, says CDC epidemiologist Nancy E. Stroup. But new research showing a slight increase in breast cancer risk among cigarette smokers sheds doubt on smoking's "protective effect."

In the retrospective study, Stroup and her colleagues collected data on 4,720 women diagnosed with breast cancer between the ages of 20 and 54, and compared them with 4,682 controls in the same age range who had no history of breast cancer. The data, described in the February *AMERICAN JOURNAL OF EPIDEMIOLOGY*, show that the women who reported having smoked more than 100 cigarettes in their lives faced a breast cancer risk 1.2 times that of those who never smoked. The risk of breast cancer did not consistently increase with the number of cigarettes a woman smoked each day or the number of years she smoked. Stroup speculates that cigarette smoking has unidentified effects that enhance breast cancer risk, counterbalancing the beneficial effect of lowered estrogen.

Enzyme, cancer spread: Link confirmed

High levels of an estrogen-dependent enzyme in surgically removed breast cancer tissue indicate an increased likelihood of recurrence, researchers report in the Feb. 1 *NEW ENGLAND JOURNAL OF MEDICINE*. The new work confirms earlier findings by French scientists (SN: 11/18/89, p.325).

Researchers at the University of Texas at San Antonio examined tumors removed from 397 breast cancer patients. They found that high levels of the enzyme cathepsin-D in 199 women whose tumors had not yet metastasized indicated these patients were 2.6 times as likely to develop a recurrence and 3.9 times as likely to die from the spreading cancer, compared with patients having low cathepsin-D levels.

Last decade warmest on record

Although last year's global surface temperatures dropped slightly, they remained relatively high, ensuring that the 1980s ended as the warmest decade in more than a century of climate records, say researchers who have conducted preliminary analyses of global temperatures for 1989.

The global average temperature last year was 0.2°C above the 30-year mean for the period 1951-1980, making 1989 the seventh-warmest year on record, reports Sergej Lebedeff of NASA's Goddard Institute for Space Studies in New York City. His group is analyzing temperature measurements made at hundreds of land stations since the 1880s. In England, others are examining both land and sea-surface temperatures collected by merchant marine ships since the 1860s. According to Philip D. Jones and his colleagues at the University of East Anglia in Norwich and the U.K. Meteorological Office in Bracknell, 1989 ranked fifth-warmest in the combined marine/land data set and was 0.23°C above the 30-year mean. In total, the 1980s had six of the 10 warmest years, Jones says.

As scientists expected, the world did cool slightly from the record high of 1988, in which temperatures rose 0.31°C above the 30-year mean in the British data set. Meteorologists and oceanographers based their prediction of cooling on temperature trends that developed late in 1988 in the tropical Pacific. At that time, water temperatures in the eastern end of the ocean dropped significantly as part of a recurring climate phenomenon called La Niña. La Niña's cold water represents the counterpart to the better-known El Niño, which brings warm water to the tropical East Pacific. In general, El Niño events tend to occur four to seven years apart. The last El Niño came in 1986, and scientists are currently watching for signs that another is on its way.

Climate experts say the planet's surface temperature will rise in response to the atmospheric buildup of greenhouse gases. Indeed, both climate records show the Earth has warmed over the past century. According to the Goddard data, the average global temperature has risen by 0.5°C to 0.7°C in that period, while the British data show a warming of 0.3°C to 0.4°C. However, most climate experts say they cannot tell for sure whether that warming stems from increasing greenhouse gases or from natural climate fluctuations.

Flashes sizzle in the South

On average, a lightning stroke in Florida packs almost twice the electric current of one in New England, reports Richard E. Orville from the State University of New York at Albany. He made the discovery as he analyzed the peak current in more than 5 million lightning flashes recorded during 1988 by 36 instruments in the eastern United States. The instruments are part of the National Lightning Detection Network, which Orville and others began organizing in 1982.

Orville's study concentrates on the peak electric currents flowing through the first return stroke, which travels from the ground up to the cloud. He found that the mean peak currents in New England measured around 25,000 amperes, compared with 40,000 to 45,000 amps in northern Florida. The study is the first to show that characteristics of lightning flashes vary as a function of latitude, asserts Orville in the Jan. 11 *NATURE*. He suggests equatorial lightning strokes might carry even higher peak currents than those measured in Florida.

As one possible explanation for the variation, Orville proposes that cloud volume may play some role. Observations have revealed that Florida's summer cumulonimbus clouds generally measure about 30 percent taller than those in New England. Their greater volume may allow these clouds to store more charge and generate more powerful currents, Orville says.