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IN THE NEWS

Melatonin and Cancer

Blind women are at significantly lower risk for breast cancer than are normally sighted women, a new study shows, and that may be due to the fact that they have consistently higher levels of the hormone melatonin.

Researchers at the Cancer Registry of Norway tracked breast cancer in more than 15,000 visually impaired women, of whom 400 were completely blind. Analysis showed that totally blind women enjoyed a 36% lower risk of breast cancer compared to sighted women, according to a report in the *British Journal of Cancer* (2001;84:397-399). Yet, women who were merely impaired visually, but not totally blind, showed no evidence of similarly protective effects, according to Dr. J. Kliukiene. "Our findings give support to the 'melatonin hypothesis,'" Kliukiene wrote.



Here's how the melatonin connection works: Secreted primarily in the pineal gland, which is seated in the brain, the hormone melatonin triggers a vast range of biochemical processes, primary among them a reduction in the body's production of estrogen at night. Indirectly, this may reduce the risk of malignancy.

For the past 20 years, scientists have explored the hypothesis that exposure to artificial light at night disrupts the natural melatonin-estrogen balance, resulting in less melatonin than there should be, and more estrogen. The net effect is a heightened risk of estrogen-sensitive tumors, such as breast cancer. Blind women are, by definition, unreceptive to light.

As early as 1990, scientists reasoned that anybody whose eyes can't detect light should be resistant to estrogen-generated tumors. Dr. Robert A. Hahn, of the Centers for Disease Control and Prevention in Atlanta, Ga., combined statistics from a national survey on women hospitalized between 1979 and 1987, including 11,700 with breast cancer. He found that blind women were only half as prone to develop breast cancer as sighted women (*Epidemiology*, May 1991).

Subsequent studies in Europe and in the United States have amplified this link between night-time light exposure, melatonin and estrogen imbalance, with a resultant rise in cancer incidence, especially breast cancer. This latest study out of Norway suggests that women maintain high melatonin production at night regardless of external light conditions, and implies that that's a uniquely protective mechanism. This finding also suggests it might be useful to explore whether increasing melatonin levels in sighted individuals might confer as yet undefined benefits.

—Jim O'Brien

I3C as possible treatment for ovarian cancer

A chemical that occurs naturally in broccoli, cauliflower, cabbage and other related vegetables is deadly to certain cancer cells. Indole-3-carbinol (I3C) can completely destroy several different lines of ovarian cancer cells, according to a recent report to the Society of Gynecologic Oncologists.

The study, conducted at North Shore/Long Island Jewish Research Institute and Long Island University Hospital, also confirmed that a product made from the vegetable extract called DIM (diindolylmethane) works as effectively as the real thing, i.e I3C.

What's more, the powerful nutrient boosted the effectiveness of the commonly used cancer chemotherapy drug cisplatin. This is just the latest addition to an already awesome body of evidence about the many cancer-fighting constituents of cruciferous, or cabbage-like vegetables.



In the current study, funded by the National Cancer Institute, when mixed with indole-3 carbinol and DIM in test tubes, ovarian cancer cells died within days. Moreover, both compounds also enhanced the effectiveness of cisplatin. Each made the chemotherapy drug more deadly to the OVCAR-3 cell line, which is known to be resistant to cisplatin. Previous findings indicated that adding the chemotherapy drug paclitaxel to cisplatin increased the kill rate of OVCAR-3 cells to 70%, but 100% of the malignant tissue died when cisplatin was combined with DIM. Coincidentally, DIM by itself wiped out ovarian cancer cells with 100% effectiveness.

The investigators believe their findings suggest that both indole-3-carbinol and DIM will eventually play a useful role in the treatment of ovarian cancer. But further studies are needed, they caution. From a practical standpoint, these latest data point out the importance of a standardized indole-3-carbinol supplement. Experts have known for a long time that cruciferous vegetables are rich in cancer-fighting chemicals. But most people don't eat enough to truly make a difference. And besides, the amount of chemicals varies with each crop harvested. But a reliably produced indole-3-carbinol supplement at an affordable price enables people to get reliable doses and to anticipate predictable results, as I3C converts to DIM in the body.

SOURCE: Long Island University Hospital study, presented as a paper to the Society of Gynecologic Oncologists, March, 2001.

—Jim O'Brien

Soy for Alzheimer's

Nutrient-rich soy may help reduce the risk of Alzheimer's disease. For some time, researchers have known that people who take supplemental estrogen for menopause management are less likely to develop Alzheimer's than those who don't. Now it appears naturally occurring compounds in soy called isoflavones carry out estrogen-like actions, with similar results, according to a new study by Dr. Helen Kim of the University of Alabama in Birmingham.

"As a brain protein biochemist, I am interested in what happens in the brain of Alzheimer's patients," Dr. Kim said when she delivered a symposium paper to the National Meeting of The American Chemical Society. She reported that a compound known as the tau protein undergoes changes over time, "and those modifications are correlated with Alzheimer's disease."

With funding from the National Institutes of Health, she followed 45 aged female monkeys whose ovaries had been removed. She broke the 45 into three groups: One received soy with isoflavones, another received soy without isoflavones and the last received Premarin, commonly used in estrogen replacement therapy. The monkeys fed soy isoflavones— called phytoestrogens— exhibited fewer of the disease-linked protein modifications than other groups, post-mortem exams showed after 36 months.

"We know estrogen is good for the brain," Dr. Kim observed. "But it looks like soy isoflavones had effects where Premarin didn't. Our data suggests soy phytoestrogens in the diet may have protective actions against certain biochemical events associated with Alzheimer's, but these actions may be different from the protective actions of real estrogen," Kim wrote in a summary.



Findings by researchers at Wake Forest University, in Winston-Salem, N.C. complement Dr. Kim's report. Said professor of comparative medicine Dr. Tom Clarkson: "We have done similar studies on rats that suggest soy isoflavones have the potential for inhibiting Alzheimer's."

—Jim O'Brien

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