

## Foods rich in antioxidants may reduce risk of Alzheimer's disease

Deborah Josefson *Nebraska*

Dietary intake of antioxidants from food sources may reduce the risk of developing Alzheimer's disease, two new studies have suggested (*JAMA* 2002;287:3223-9, 3230-7).

Both studies found that the benefit was present when the intake was from food sources rather than from supplements.

The studies were conducted because it has been suggested that oxidative stress has a mechanistic role in the development of Alzheimer's dementia. Several lines of evidence previously implied that oxidative damage to lipid membranes could disrupt normal neuronal and glial cell functioning, leading to the formation of amyloid plaques and to neuronal cell death.

Hence, it was hoped that dietary intake of antioxidants such as vitamins E and C and

$\beta$  carotene might inhibit the production of free radicals and reactive oxygen species.

Working independently on two continents, researchers in Rotterdam, the Netherlands, and in Chicago, Illinois, found evidence to support these theories.

Drs Marianne Engelhart and Mirjam Geerlings and colleagues from the Erasmus Medical Center in Rotterdam led the Rotterdam study, a population based prospective cohort study that examined the effect of dietary intake of vitamins C and E on the risk of incident Alzheimer's disease.

The Rotterdam study, conducted from 1990 to 1999, enrolled 5395 people aged 55 and over who were free of dementia at baseline, could give a reliable dietary history, and were not living in an institution. The mean age of the participants at

baseline was 67.7 years (59% were women). They were followed up for an average of six years.

Dietary consumption of antioxidants was assessed by means of a self administered "food frequency" questionnaire, which evaluated dietary consumption of 139 food items and the use of vitamin supplements. The researchers evaluated the association between dietary intake of antioxidants and the development of Alzheimer's disease using Cox proportional hazards analysis.

Adjustments were made for age, sex, mental status, alcohol intake, education, smoking habits, body mass index, total energy intake, presence of carotid plaques, and the presence of the apolipoprotein e4 allele, which is associated with an increased risk of Alzheimer's disease.

At six years' follow up, high intakes of vitamins C and E were associated with a lower risk of the disease (rate ratios per 1 SD increase in intake were 0.82 (95% confidence interval 0.68 to 0.99) and 0.82 (0.66 to 1.00) respectively).

Good sources of vitamin C are citrus fruits, kiwi, sprouts, broccoli, and cabbage, while important sources of vitamin E are grains, nuts, milk, and egg yolk, the authors say.

In the Chicago study Drs Martha Morris and Denis Evans of Rush-Presbyterian Hospital conducted a similar prospective cohort study involving 815 men and women aged 65 and older. These patients were followed for an average of 3.9 years and included both African Americans and white Americans.

Alzheimer's disease developed in 131 subjects. When factors such as age, education, and presence of apolipoprotein e4 allele were taken into account, the group with the highest vitamin E intake had a 70% lower risk of developing the disease than those with the lowest vitamin E intake.

Neither this study nor the Rotterdam study found a benefit from consuming supplement sources of the vitamins, even though a higher dose is available in the supplements. □

## Tamoxifen may increase risk of uterine sarcoma

Scott Gottlieb *New York*

The US Food and Drug Administration issued a new warning on the drug tamoxifen, advising doctors that it may cause an aggressive cancer of the uterus.

The labelling of tamoxifen will be changed to add a "black box" warning about the newly identified risk of uterine sarcoma, the drug agency said. Black boxes are used to draw attention to problems that are serious and potentially life threatening.

Letters advising doctors of the new warning were sent out last month, but the information was not posted on the agency's website until Thursday.

Tamoxifen was already known to increase the risk of another, less dangerous type of uterine cancer, endometrial adenocarcinoma, which is usually detected at an early, curable stage. But the risk of the more dangerous type of cancer had not been recognised previously.

The new warning was directed only at women who have not had breast cancer but are at high risk. The warning does not tell those women to avoid tamoxifen, but it does urge them to talk to their doctors about its benefits and risks. The warning does not apply to women who have already had breast cancer and who take tamoxifen to prevent a recurrence. For those women, the FDA said, the benefits far outweigh its risks.

The warning is also aimed at women who have had a very early form of breast cancer that is still confined to the milk ducts (ductal carcinoma in situ, or DCIS). In those two groups, unlike those who have had invasive breast cancer, it has not been proved that tamoxifen prolongs life, even though it does lower the risk of breast cancer.

Uterine sarcoma is rare, estimated to occur in 0.17 women per 1000 a year who take tamoxifen. In women not taking the drug, there are far fewer cases—only 0.01 to 0.02 cases per 1000 women. Since 1978, when tamoxifen was first marketed in the United States, 159 cases of uterine sarcoma worldwide have been reported in women taking the drug. □



### All singing, all dancing pop stars target cancer

A group of young pop stars formed by the charity Cancer Research UK gave their debut performance to a group of more than 300 schoolchildren in London last week.

Their performance consists of dazzling dance routines and catchy pop songs whose lyrics are designed to educate children and teenagers about cancer prevention. The songs cover topics such as sun protection, smoking, diet, and exercise. With the catch phrase "knowledge is power," the group aims to swell the ranks of children entering research and the caring professions in the future. The pop stars can be seen at venues all round the United Kingdom this summer. Claire Mckenna *BMJ*

For more details see [www.cancerresearchuk.org](http://www.cancerresearchuk.org)