β-Carotene effects linked to metabolism

β-Carotene may play a role in preventing cancer because of the way the body converts it into retinoic acid, a U.S. Department of Agriculture (USDA) researcher has announced.

Xiang-Dong Wang of USDA’s Human Nutrition Research Center on Aging at Tufts University in Boston said that cultured human intestinal cells were found to convert dietary β-carotene into retinoic acid and related compounds. Wang’s team found that the retinoic acid formed in the intestines of ferrets—which metabolize β-carotene similarly to humans—was absorbed rather than degraded.

The researchers also showed that lung, liver, kidney and fat tissues from humans and animals can convert β-carotene into retinoic acid and other retinoids.

Wang, who recently won a "new investigator award" from USDA’s Agricultural Research Service for this work, noted that the findings may explain some of the anticarcinogenic activity of β-carotene.

Retinoic acid was the subject for speakers at the “Diet and Cancer: Markets, Prevention and Treatment” research conference held in late October under the auspices of the American Institute for Cancer Research. Speakers described findings that retinoic acid, a derivative of vitamin A, offers a potential to help prevent and treat a variety of malignancies (Details: Food Chemical News, Nov. 9, 1992, p. 10).

Diet-breast cancer link still unresolved

A low-fat, high-fiber diet may not reduce the risk of breast cancer for middle-aged women, according to a large U.S. study examining the link between diet and breast cancer.

In an eight-year study of 89,494 women between the ages of 34–59, researchers from Brigham and Women’s Hospital and Harvard Medical School found 1,439 developed breast cancer, according to the study published during October in the Journal of the American Medical Association.

When the study began in 1980, participants’ fat intake ranged from 29–49% of energy, and fiber consumption ranged from less than 11 grams a day to more than 22 grams. In the study, researchers said they found no evidence that women consuming less than 29% of energy from fat had lower risks of breast cancer than women with higher fat intake.

Meanwhile, a study published in the Nov. 4 issue of the Journal of the American Medical Association reported that women in their 20s might be able to reduce their risk of osteoporosis later in life by increasing their level of exercise and dietary calcium.

In the study conducted between 1984 and 1990, a research team from Creighton University School of Medicine tracked the diets and exercise routines of 156 female university students. The goal was to see whether bone mass continued to increase during young adult years and if factors such as nutrition and physical activity might affect this gain. Findings showed some bone gain occurred in the spine, total body and forearm.

Researchers found that the ratio of calcium and protein intake showed the strongest influence on the rate of gain, followed by the level of physical activity.

Overweight teenagers may face health woes

A U.S. Department of Agriculture study indicates being overweight during adolescence may be more of a predictor of coronary heart disease, cancer and other problems than being overweight as an adult.

In the Nov. 5, 1992, issue of the New England Journal of Medicine, researchers from the U.S. Department of Agriculture Human Nutrition Research Center on Aging at Tufts reported higher incidences of coronary heart disease and atherosclerosis in men and women who were overweight during adolescence, although only men had increased risks of dying from those diseases. Males had a higher risk of colorectal cancer and gout while females faced a higher risk of arthritis, according to the study headed by Aviva Must.

The study involved 508 lean or overweight adolescents who participated in the Harvard Growth Study of 1922–1935. Overweight adolescents were defined as those with a body-mass index that on two occasions was greater than the 75th percentile in subjects of the same age and sex in a large national survey.

The study indicated a higher incidence of heart disease, atherosclerosis, gout, colorectal cancer, hip fracture and arthritis among those who were overweight in adolescence and who survived to their early 70s. Researchers also found that 52% of the surviving subjects who had been overweight as teens were still overweight in 1988.

Meanwhile, a report in the Oct. 21, 1992, Journal of the American Medical Association indicated that adults who maintain their weight may live longer than those whose weight fluctuates.

In the study, a research team headed by I-Min Lee of the Harvard University School of Public Health evaluated weight changes among 11,703 Harvard alumni starting in 1962. Findings showed that the lowest mortality was among those whose weight fluctuated less than 2.2 pounds.
The team concluded that both weight loss and weight gain were associated with increased mortality from all causes and from coronary heart disease but not from cancer. The study was supported by the U.S. Public Health Service and the National Cancer Institute.

Neuroscience meeting looks at fat, disease

Research on how fat affects the body and why some people eat excessive amounts of fat may help in preventing and treating diseases such as diabetes and obesity, attendees learned at the Society for Neuroscience's annual meeting in late October, according to the Nov. 2, 1992, Food Chemical News.

The report noted that in one rat study, Canadian researchers found that a high-fat diet can adversely affect the way the body responds to stress. The team, led by B. M. Tannenbaum at the Douglas Hospital Research Center in Montreal, put male adult rats on a high-fat diet and another group on a control diet. Both groups of rats then underwent stress.

The researchers found that the high-fat group had slightly elevated levels of plasma corticosterone before, during and after stress. Also, the study showed a diet rich in fat can disrupt the body’s ability to respond to insulin.

Meanwhile, researchers from Rockefeller University in New York reported that galanin, a brain chemical, may be the reason some people eat too many fat-rich foods. When injected into the hypothalamus of rats, galanin caused the animals to eat excessive amounts of fat but not carbohydrates or protein, according to Sarah Leibowitz of Rockefeller University.

Study compares lauric, palmitic acids

A study of 14 male patients by Margo A. Denke and Scott M. Grundy of the Center for Human Nutrition at the University of Texas Southwestern Medical Center showed that lauric acid raised total and low-density lipoprotein (LDL) cholesterol compared with oleic acid, but not as much as palmitic acid did.

The patients, ages 44–71, were given a liquid-formula diet at the metabolic ward of the Veterans’ Affairs Medical Center in Dallas.

The findings, published in the November 1992 issue of the American Journal of Clinical Nutrition, showed that a synthetic high-lauric oil resulted in higher concentrations of plasma total cholesterol and LDL cholesterol when compared with high-oleic sunflower-oil oil. However, it did not raise total and LDL cholesterol concentrations as much as did palm oil. No differences were noted in plasma triglycerides or high-density lipoprotein (HDL) cholesterol.

“This study indicates that lauric acid should be classified along with palmitic acid as a cholesterol-raising saturated fatty acid,” Denke and Grundy concluded.

Format dispute delays labeling

Plans by the U.S. Food and Drug Administration (FDA) and the U.S. Department of Agriculture (USDA) to publish revised food labeling regulations by Nov. 8, 1992, were put on hold after the two agencies were unable to agree on labeling format.

There was speculation that the issue would not be resolved during the final weeks of the Bush Administration but could only be expected after the new Clinton Administration takes control of the federal bureaucracy.

Neither agency issued the final versions of their nutrition labeling packages by the promised deadline. As a result, food processors legally are subject to FDA’s rule proposals published in 1991, which, under provisions of the 1990 Nutrition Labeling and Education Act (NLEA), take effect in May 1993 unless different regulations are adopted before then.

Prompting the missed deadline was a dispute over how food labels should present nutritional information. FDA reportedly prefers a format that would require labels listing grams of fat, protein and other nutrients per serving as well as indicating how much each serving contributes to a daily diet of 2,000 calories and 65 grams of fat. USDA, however, has opposed that format by saying it is too complicated for consumers to understand.

USDA’s Food Safety and Inspection Service prepared two possible labeling formats: one carrying dietary admonitions without listing daily values and a second listing daily values but only as a range (for example, 1,600 to 2,800 calories a day).

Food industry officials regard the rules proposed in 1991 as more onerous and unreasonable than the ones that were expected to be issued in November.

FDA regulates all nonmeat foods and USDA regulates meat products. Even though NLEA exempts foods controlled by USDA, FDA had said it would require nutritional labels and would follow the same format as that...