Subjects compensate for fat loss in olestra diet

A study by researchers at the University of Leeds in England and Unilever Research Laboratory in The Netherlands has shown that replacing dietary fat with sucrose polyester fat substitutes may lead subjects to compensate for the fat reduction.

Jacqui R. Cotton, Jan A. Weststrate, and John E. Blundell noted that previous experiments using the sucrose polyester (SPE, or olestra) to reduce energy from fat by 40% to 30% did not lead to a compensatory response. In this latest study, however, there was a behavioral response when energy from fat was reduced from 32% to 20%.

For the study, 15 lean, healthy males came to the Human Appetite Research Unit at the University of Leeds twice for two consecutive test days at one-week intervals. On day one of each session, subjects only consumed all of the preset meals provided. On the second day, subjects were given preweighed food and told to eat as much as they wanted for breakfast, lunch, and dinner. After the evening meal, the subjects chose whatever food and drink they wanted. On one of the first days, subjects were given meals containing a control fat, and on the other first day, the foods contained SPE; this manipulation was done covertly. On the second day during both conditions, subjects were allowed to eat as much as they wanted at the test meals; none of the foods offered on day two were manipulated in any way. One-half of the subjects received the control foods first on day one, and the other half received the SPE foods. Subjects were randomly assigned to these groups.

By using SPE, researchers decreased the proportion of energy obtained from fat from 32% to 20% on the SPE test day. This was achieved by incorporating SPE into pizza, cookies, apple pie, and as a spreading margarine.

At the end of the day of the substitution, subjects reported a greater perception of hunger which persisted into the next day. Subjects then ate significantly more over the next day, compensating for 74% of the energy deficit from the previous day.

"It seems that a reduction of fat to 30% of energy need not provoke a physiologic reaction and a compensatory behavioral response in our study population. However, when the reduction is more severe, from 32% to 20% and includes a lowering of daily energy to 2,300 kcal, energy requirements are compromised," they wrote.

Study compares lauric, palmitic, oleic diets

A study comparing the effects of diets rich in lauric, palmitic, or oleic acids on serum lipids and lipoprotein levels has verified that both lauric and palmitic acids are hypercholesterolemic compared with oleic acid.

In their findings published in the June 1996 issue of the American Journal of Clinical Nutrition, researchers Elisabeth H.M. Temme, Ronald P. Mensink, and Gerard Hornstra of The Netherlands noted that lauric acid raised total cholesterol concentrations more than palmitic acid, but pointed out that this is partly due to a larger rise in high-density lipoprotein (HDL) cholesterol compared with oleic acid.

For the study, 18 women and 14 men consumed in random order three experimental diets, each for six weeks. The diets contained 40% of energy as fat, of which 28% was made up of the experimental fats. The fat high in lauric acid was a mixture of palm kernel oil (75%) and high-oleic sunflower oil (25%). The fat high in palmitic acid consisted of dairy fat (55%), palm stearin (36%), and sunflower oil (9%); the fat high in oleic acid consisted of dairy fat (37%) and sunflower oil (63%).

Monounsaturates fed on Antarctic expedition

Members of an Antarctic expedition who consumed canola margarine and cooking oil in place of other dietary fats experienced significant beneficial changes in their lipoprotein profile, according to a report in the June 1996 issue of the American Journal of Clinical Nutrition.

Bronwyn Matheson and colleagues of Deakin University in Australia reported that a 13-week dietary intervention was carried out with 23 members of a 1991 wintering party of an Australian National Antarctic Research Expedition. In the study, subjects used canola margarine and cooking oil in place of butter, margarine containing 28% saturated fat, polyunsaturated margarine, and vegetable oil. The study was a crossover design in which subjects acted as their own controls. An initial 16-week control period was followed by the 13-week intervention period, and then by a second control period of 13 weeks.

During the dietary intervention, subjects had a mean intake of 16.6 grams of canola margarine per day and 13.5 grams of canola oil per day. Thus, canola margarine or oil contributed 29.5% of total fat intake. Subjects experienced a 6.7% decrease in total cholesterol and a 10.0% decrease in low-density lipoprotein (LDL) cholesterol, while high-density lipoprotein concentrations showed little change.

"The lipoprotein changes observed during canola substitution in this Antarctic study were seen despite the fact that total fat intake remained high (37–38% of energy) and intake of saturated fat remained well above 10% of total energy," researchers reported. They also noted that a second wintering-over group that was not on the dietary intervention did not experience these changes.

CDC issues guidelines on school health education

The Centers for Disease Control (CDC) and Prevention has issued guidelines for "School Health Programs to Promote Lifelong Healthy Eating."
The guidelines provide seven recommendations for a school health program. These include:
- adopt a coordinated school nutrition policy that promotes healthy eating through classroom lessons and a supportive school environment
- implement nutrition education from preschool through secondary school as part of a sequential, comprehensive school health education curriculum designed to help students adopt healthy eating behaviors
- provide nutrition education through developmentally appropriate, culturally relevant, fun, participatory activities that involve social learning strategies
- coordinate school food-service and nutrition education with other components of the comprehensive school health program to reinforce messages on healthy eating
- provide staff involved in nutrition education with adequate pre-service and ongoing in-service training focusing on teaching strategies for behavioral change
- involve family members and the community in supporting and reinforcing nutrition education
- regularly evaluate the effectiveness of the school health program in promoting healthy eating and change the program as needed.

CDC said that promoting healthy eating patterns will not only prevent immediate health problems such as undernourishment, obesity, eating disorders, iron deficiency anemia and dental caries, but also may prevent long-term health problems.

Survey: British also struggle with obesity
Survey results published in June by Great Britain's Department of Health showed that more persons in Great Britain were obese in 1994 than in 1991.

The survey is conducted annually to monitor progress toward the government's Health of the Nation targets for cardiovascular disease. In the latest results, the number of obese people increased from 12.7% to 13.2% of men and 15% to 16% of women between 1991 and 1994. These findings confirm a trend of increasing weight since the mid-1980s, according to an article in the June 8, 1996, issue of the British Medical Journal.

The British government has a goal of reducing rates of obesity to 6% of men and 8% of women by the year 2005.

The survey also found that 88% of men and 90% of women had at least one of the four major risk factors for cardiovascular disease. Over half of the men and 62% of the women hardly ever or never exercise, while nearly a third of men and 27% of women smoked cigarettes.

Vitamin C in animals shows cancer benefits
Animal experiments in Japan have demonstrated that vitamin C may suppress the metastasis of cancer, according to a report from the Japan Oil Chemists' Society.

Professor Nobuhiko Miwa of Hiroshima Prefectural University, in cooperation with researchers from Toyama Pharmaceutical University and Showa Denko Co., has found that the function of a harmful enzyme in the cancer cells of rats was weakened, thus depressing the ability of cancer metastasis, after a derivative of vitamin C—Asc2P—was injected into a melanoma-infected rat.

Findings showed the vitamin C concentration in the cancer cells of the rat increased by 40-fold, compared with levels in the control rat. In addition, the metastasis of melanoma decreased by 60-70% compared to the control rat. As a result, the lifespan of the experimental rats was extended by 2.5-2.8 times compared to that of control rats.

Miwa also reported that by culturing the cancer cell of human fibroma and adding Asc2P, researchers observed that penetration ability, reflecting metastasis ability, decreased 10-20% compared to controls.

Meanwhile, a research group from Osaka University and Nagoya University in Japan has discovered a protein relating to colon cancer. The protein, the group reports, is similar to the protein that suppresses cancer in fruit flies and thus may be useful for developing a drug to cure human colon cancer.

Professor Toru Akiyama of Osaka University and colleagues have called the protein DGL, which consists of approximately a thousand amino acids. The protein, Akiyama reports, has the property to combine with a protein produced by the APC gene causing colon cancer.

News briefs
The International Life Sciences Institute will hold a meeting on the Nutritional Implications of Macronutrient Substances on Oct. 27-29, 1996, at the Crystal City Marriott in Arlington, Virginia. The focus will be on the impact of macronutrient substances on energy and nutrient intake, food selection, and dietary patterns. For information contact the New York Academy of Sciences at 212-838-0230 (e-mail: conference@nyas.org).

The U.S. Food and Drug Administration has published an article entitled "Infant Formula: Second Best But Good Enough" in the June 1996 issue of FDA Consumer. The article, written by Isadora B. Stehlin, discusses nutrient requirements of infants and developments related to infant formula. Meanwhile, a number of pediatricians, nutrition researchers, and public interest groups have urged FDA to require the inclusion of docosahexaenoic and arachidonic acids in all infant formulas on the basis that these fatty acids are essential for brain and eye development as well as improved immune function and infant growth, according to a report in the July 1, 1996, issue of Food Chemical News.

INFORM, Vol. 7, no. 9 (September 1996)