

Margarine is anything but a marginal fat

What's the leading source of calories in the U.S. diet? Whole milk — the primary source of protein — tops the charts, contributing 3.88 percent. Cola-flavored soft drinks — the main sugar contributor — provide 3.04 percent of calories. At 2.48 percent, margarine — the leading source of fat — captures third place. Shortening, the third leading source of fat, trails in 11th place; it provides 1.43 percent of calories.

Researchers with the U.S. Department of Agriculture (USDA) reported these rankings last week at an agency-sponsored nutrition meeting in Beltsville, Md. The findings emerge from USDA's Continuing Survey for Food Intakes of Individuals (CSFII), conducted between 1989 and 1991.

The survey gathered 3 days' worth of data on 11,912 people for foods prepared at home, bought in grocery stores, or eaten in restaurants. Though the most detailed analysis yet of the composite U.S. diet, CSFII remains an imperfect tool, notes David Haytowitz of USDA's Human Nutrition Information Service (HNIS) in Hyattsville, Md.

For instance, a person who reports having eaten lasagna doesn't provide a list of ingredients in the entree. Rather, an HNIS computer program calls up standard recipes for lasagna and then calculates how much pasta, tomato, and other foods went into the portion eaten. CSFII also collected data on the fats used in

preparing foods — for example, whether cooks used oils instead of shortening or margarine. However, Haytowitz notes, the new rankings do not yet reflect such individual adaptations.

Consumers may find the new fat data especially disturbing in light of a commentary published this week in the *MAY AMERICAN JOURNAL OF PUBLIC HEALTH*.

In it, Walter C. Willett and Albert Ascherio of the Harvard School of Public Health in Boston review recent epidemiological and metabolic data linking consumption of the partially hydrogenated fats in margarines and shortenings to increased risk of heart disease. Indeed, a new analysis by the pair indicates that at least 30,000 deaths per year in the United States may result from consumption of these processed fats.

Food processors convert oils into semi-solid fats that resemble butter or lard by adding hydrogen atoms to an unsaturated fat's chemical double bonds. Partially hydrogenated margarines and shortenings may contain up to 40 percent of their fats in this modified — or *trans* — form. Indeed, for most people, *trans* fats now make up about 2 percent of calories eaten.

Manufacturers began hydrogenating edible oils nearly a century ago, and the resulting modified fats had permeated the U.S. diet long before anyone per-

TOP SOURCES OF FAT	
Food	% of dietary fat
Margarine	7.13
Whole milk	5.42
Shortening	4.14
Mayonnaise, salad dressing	3.25
American cheese	3.21
Ground beef, regular	2.67
Lowfat (2%) milk	2.33
Eggs	2.21
Butter	2.05
Total	32.41

CSFII 1989-1991

formed analyses to gauge their health implications, Willett and Ascherio observe.

Indeed, indications that these *trans* fats can alter the ratio of various cholesterol-carrying lipoproteins in the blood didn't begin to emerge until 4 years ago (SN: 8/25/90, p.126).

Since then, several studies have confirmed the ability of *trans* fats not only to increase concentrations of "bad," low-density lipoproteins (LDLs) — as most saturated fats do — but also to decrease concentrations of "good," high-density lipoproteins (HDLs).

The Harvard duo recommends "a regulated phaseout or strict limitation of partially hydrogenated fat in the U.S. diet." Short of that, they argue, the food-labeling law that took effect May 8 should be amended "immediately" to specify quantities of *trans* fats. Today, manufacturers need only list a food's total- and saturated-fat content. — J. Raloff

Young scientists win big in Birmingham

What do plantain extracts and optical fibers have in common? Both proved an important ingredient in an award-winning science project presented at the 45th International Science and Engineering Fair (ISEF) held May 8 to 14 in Birmingham, Ala.

More than 290 students received awards at a banquet May 13. Over 1,000 judges selected the winners from among 929 participants representing 30 countries. First-place through fourth-place winners in 14 project categories received \$500 to \$100. The top prizes include overseas travel. The annual ISEF is a program of Science Service, which publishes *SCIENCE NEWS*.

The Glenn T. Seaborg Nobel Prize Visit Award enables students to attend the Nobel ceremony in Stockholm in December. This year, the award went to Sarita Maria James, 17, of Homestead H.S. in Fort Wayne, Ind., and Fred M. Niell III, 17, of Lausanne Collegiate School in Memphis, Tenn.

James designed an automatic speech recognition system using signal processing, which helps characterize data, and neural networks, an information-processing system that helps find pat-

terns. Niell built a cyclotron to find out whether particle mass resonance is demonstrated with a variable frequency cyclotron. He found "what seems to be a resonance point or narrow range of resonance," he reports.

Three students won trips to the Ninth International Science and Technology Fair in Mendoza, Argentina, in November. Daniel Alfonso Colon and Jason Robert Sanchez-Gil, both 18-year-old students at Colegio San Ignacio De Loyola in Rio Piedras, Puerto Rico, won for their work showing that plantain extracts may slow the growth of tuberculosis bacteria.

David Alec Bray, 16, from T.C. Williams H.S. in Alexandria, Va., developed an award-winning computer model that predicts how an oil spill in the Gulf of Mexico would disperse.

Alexandria, Va., produced other winners as well: Diego Francisco Figueroa, 17, and Kenna Rael Mills, 17, from Thomas A. Edison H.S. won a trip to the Sixth European Union Contest for Young Scientists, to be held in the Grand Duchy of Luxembourg in September. The team created a waste-water treatment system using duckweed that sig-



T. Lengnick/FocusOne

ISEF participants surround prizewinners Daniel Alfonso Colon, Jason Robert Sanchez-Gil, and David Alec Bray at an awards ceremony.

nificantly reduces certain pollutants. They also analyzed how to compost the duckweed.

Water treatment also garnered a travel award for Ben Venable, 17, of Tallassee (Ala.) H.S. He won a scholarship to study at the Weizmann Institute of Science in Rehovot, Israel. Venable developed a device that uses hydrogen peroxide and ultraviolet light transmitted by optical fibers to detoxify pollutants in aquifers. Three additional students won Explorers Club travel awards for study with specific scientists.

About 400 ISEF participants received prizes from professional science societies or federal and industrial organizations. — T. Adler