

## FOOD TECHNOLOGY

blend is less than 100% vegetable oil.

### Choice of the U.S. food industry

Because of its composition, flavor and stability, the use of cottonseed oil in its various forms, particularly in blends with other fats and oils, will remain strong in frying applications. According to R.W. Garcia in an interview for *Snack Food* magazine (24), cottonseed oil is used to fry his firm's tortilla chips because it has "good color, a nutty flavor, good shelf life and good stability in manufacturing."

Don Kline of Snyder's of Hannover, a snack food manufacturer, said in the April 1988 *Snack World* (18) that cottonseed oil does not require hydrogenation for good frying stability, unlike safflower, sunflower, corn and peanut oils.

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## HEALTH & NUTRITION

# National conference eyes cholesterol

*The following article highlighting findings discussed at the First National Cholesterol Conference sponsored by the National Cholesterol Education Program (NCEP) was prepared by J. Edward Hunter of Procter & Gamble Co., Associate Editor for JAOCS News for Health and Nutrition.*

The First National Cholesterol Conference, entitled "Cholesterol: A Risk Factor Whose Time Has Come," was held Nov. 9-11, 1988, in Arlington, Virginia. The purpose was to allow researchers, physicians, and policy and program experts the opportunity to share their knowledge and program successes in the field of cholesterol. The conference included discussion of current adult treatment guidelines, planning sessions related to diet and blood cholesterol, workshops on cholesterol measurement and screening, and exhibits displaying equipment, products and services related to cholesterol education and control.

About 25% of adult Americans are considered at increased risk of developing coronary heart disease (CHD) due to high blood cholesterol, namely those with total serum cholesterol levels greater than 240 mg/dl, according to NCEP officials. Surveys indicate that less than half of all adults have had their cholesterol checked during the last year, and only 7% know their own level. Although there appears to be agreement that total blood cholesterol levels less than 200 mg/dl are desirable for adults, some speakers pointed out that even individuals with total cholesterol levels under 200 mg/dl could be at increased risk if their high density

lipoprotein (HDL) levels also are low, i.e., less than 35 mg/dl.

### Adult Treatment Panel guidelines

In three concurrent sessions, experts in lipid research and cholesterol education expressed their views on the NCEP Expert Panel on Detection, Evaluation and Treatment of High Blood Cholesterol (Adult Treatment Panel report). The panel had classified people with total serum cholesterol values ranging from 140 to 300 mg/dl into three groups: "desirable" as less than 200 mg/dl, "borderline high" as 200-239 mg/dl, and "high" as greater than 240 mg/dl.

NCEP's Step-One Diet, which is identical to the American Heart Association's prudent diet, includes reducing daily fat intake to less than 30% of calories, with less than 10% from saturated fat, no more than 10% from polyunsaturated fat

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and 10-15% from monounsaturated fat, and reducing dietary cholesterol to less than 300 mg/day. If the Step-One Diet does not achieve desired lowering of blood cholesterol levels, the patient would progress to the Step-Two Diet, which calls for further reduction in saturated fat intake to less than 7% of calories and cholesterol intake of less than 200 mg/day.

Featured speakers in one session were R.E. Olson of the State University of New York at Stony Brook, N.J. Stone of Northwestern University Medical School, N. Spritz of the New York University School of Medicine and D.R. Illingworth of Oregon Health Sciences University. Olson agreed with the panel that everyone age 20 or older should learn their total serum cholesterol level and that the Step-One Diet may be helpful in controlling serum cholesterol levels in many patients. However, he voiced four objections to the report. Olson said he felt the cut-off points for hypercholesterolemia are inappropriate; he pointed out that if less than 200 mg/dl is accepted as desirable, 200-239 should be borderline, not borderline high (with no intervention required) and values of 240-280 mg/dl—in which the risk of CHD mortality increases from twofold to fourfold compared to 200 mg/dl—should be considered moderate hypercholesterolemia.

Olson also said the report does not adequately stress the importance of HDL levels as a risk factor. Results from the Framingham Heart Study have indicated that if HDL levels were less than 35-40 mg/dl, the incidence rates for CHD were high regardless of the total cholesterol level. HDL levels around 60 mg/dl or higher were associated with low risk regardless of the total cholesterol level. Third, he said the report lacks sufficient emphasis on altering other modifiable risk factors, such as cigarette smoking, hypertension and obesity. He noted there is no evidence that individuals with modest increases in serum cholesterol (200-239 mg/dl) without other risk factors would benefit from adopting the Step-One Diet.

Agreeing with Olson, Stone noted that for people in the total cholesterol range of 200-239 mg/dl, the risk factor profile of the individual should help determine which patients merit greater attention. He said that the CHD risk for a smoker with a serum cholesterol level of 200 mg/dl is equivalent to that of a nonsmoker with a cholesterol level of 255 mg/dl.

Spritz pointed out that total mortality has not been affected beneficially in any of the coronary prevention trials conducted. He noted that the Framingham Study has not demonstrated any benefits for blood cholesterol-lowering in people over 60 years of age. Except for individuals trying to lose weight, he felt the low-fat diet has been oversold and that alternative approaches, such as substitution of monounsaturated for saturated fatty acids, may be more desirable from a health standpoint. He said that long-term benefits from, and compliance to, a low-fat diet *per se* have not been studied carefully. Finally, he cautioned the panel to keep its messages in proper perspective so that individuals do not extend the recommendations beyond safety and reason.

Illingworth noted that the expert panel intended diet to be the cornerstone of therapy for high blood cholesterol and that drug treatment, in conjunction with the diet, usually should not be initiated until the diet has been tried for about six months. He added that there is not a pressing need to treat postmenopausal women who have no family history of cardiovascular disease with diet or drugs unless their total blood cholesterol levels exceed 280 mg/dl.

### Diet and blood cholesterol

In a plenary session on diet and blood cholesterol, Stone noted that diet modification should be the primary approach in treating patients with high blood cholesterol. He commented that the P/S ratio concept often is misleading (e.g., it does not account for possible monounsaturated fatty acid benefits) and should not be overly relied upon. He also noted that "all saturated

fatty acids are not created equal." Stearic acid, for instance, apparently is not hypercholesterolemic whereas palmitic acid seems to be.

Potential advantages of a high monounsaturated diet include reduction of low density lipoprotein (LDL) cholesterol (when substituted for saturated fat), conservation of HDL cholesterol, no increase in triglycerides and improved diet palatability compared to a low-fat diet.

Stone emphasized that it is premature to recommend fish oil supplements to the general public. Some studies actually have demonstrated increased LDL cholesterol levels after fish oil therapy. Definitive clinical trials are needed to demonstrate whether fish oil treatments can prevent atherosclerosis in humans. Also, he noted, there is wide variability among individuals in the response of blood cholesterol to dietary cholesterol. Finally, he suggested the following strategies to improve patient compliance to a cholesterol-lowering diet: introduce changes gradually, involve the whole family with the diet, and provide frequent and positive feedback.

### Cholesterol screening

Public screening provides an opportunity to measure blood cholesterol levels in large numbers of people and to provide education. The key objective is to identify high risk people (with blood cholesterol levels greater than 240 mg/dl) and to get them into the health care system. Speakers at a plenary session on this topic noted that screening at shopping malls or supermarkets to date has attracted primarily women and elderly individuals, most of whom have had at least one previous measurement of blood cholesterol. Young and older men, however, have been reached by shifting the screening to work sites. Health professionals involved with screening generally have been pleased with the potential of this method to reach large segments of the population. One concern is that minority populations have not been reached extensively in screenings conducted thus far.

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P. Greenland of the University of Rochester School of Medicine and Dentistry reported that a recent study in Rochester indicated that 59% of participants who had a high screening cholesterol level actually saw a physician for follow-up within five months of the screening. An additional 8% had contacted but not yet visited a physician. Greenland concluded that reasonably high referral rates are possible with high risk individuals. It is not yet known, however, whether screening and risk factor education programs will result in long-term blood cholesterol-lowering.

### Communicating the cholesterol message

In a plenary session on communicating the cholesterol message, W.D. Novelli of Porter Novelli noted that in order to get the cholesterol message to the public, it needs to be easier for the public to do something about it. He suggested that the message be positioned as a personal health issue rather than as a diet issue.

Jane Brody of the *New York Times* said that a key point to convey to consumers is that it is possible to decrease their intake of saturated fat and cholesterol without entirely giving up their favorite foods. She said that as consumers change their diets, their tastes also will change. Her advice to consumers was to keep intake of fat and cholesterol as low as possible, replace saturated fatty acids with monounsaturated or polyunsaturated fatty acids, eat more fruits and vegetables (for fiber), eat less beef, exercise regularly and stop smoking.

W.P. Castelli of the Framingham Heart Study emphasized

NCEP's goal for adults to keep total blood cholesterol well under 200 mg/dl and HDL cholesterol above 45 mg/dl. He and others suggested keeping dietary advice as simple as possible, such as to eat fish twice a week and to eat shrimp rather than cheddar cheese because of shrimp's lower saturated fat content.

### Cholesterol content of eggs

Recent data obtained by the U.S. Department of Agriculture (USDA) indicate that the reported cholesterol content of a large egg of 274 mg/dl (*USDA Handbook 8-1*, Item 01-123, 1976) is too high. A more accurate figure apparently is about 210 mg/egg. This value is based on a July 1988 sample of eggs collected from 118 of the top 200 egg handlers in the U.S. representing all egg-producing states and regions and also on a better method of analysis than used previously. Assuming that work in progress confirms the lower figure, USDA probably will formally announce this finding next spring or summer and will make corrections in its publications as they routinely are revised and updated.

### Future cholesterol intervention

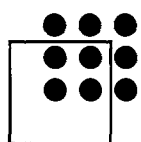
In a plenary session on cholesterol intervention two years from now, J. LaRosa of George Washington University Medical Center, who served as conference chairman, noted that current knowledge now allows intervention to reduce elevated blood cholesterol levels. Elevated blood cholesterol is a risk factor that must be controlled in many people, although researchers are less confident about the potential benefits of cholesterol-lowering in children and the elderly. He sug-

gested that areas for further research include investigating means for regressing atherosclerotic plaques, effects of low HDL levels as a risk factor, effects of individual fatty acids on lipoprotein and apoprotein levels, effects of monounsaturates vs. polyunsaturates on HDL levels, and effects of cholesterol-lowering drugs on atherosclerosis. LaRosa said he favors directing recommendations on controlling blood cholesterol to the entire population rather than strictly to individuals at risk.

LaRosa predicted more extensive use of population screening (finger-stick methodology), development of dietary guidelines for other population groups (children, the elderly, women and ethnic minority groups), increased cholesterol knowledge among the public and health professionals, and increased intervention for individuals with high blood cholesterol levels. He also predicted that the cholesterol message will be targeted to groups other than white, middle-class males (particularly to the blue-collar population) and that more informative food labeling will enhance public education.

LaRosa said the conference was an important first step in ending the "epidemic of atherosclerosis." He advised health professionals to continue to promote NCEP dietary recommendations despite their expected initial unpopularity. He also cautioned health professionals not to be overzealous, not to overpromise, and to listen to the views of skeptics.

The next national cholesterol conference is expected to be held in approximately two years.



# Bleaching Earth

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