

Fat-controlled foods for the dinner table

HELEN B. BROWN, PH.D.

Division of Research

CATCH phrases, such as "no eggs," "no butter," or "plenty of corn oil," do not define an effective hypocholesteremic diet, nor do the more sophisticated phrases "less saturated fat," "more polyunsaturated fat." Such slogans mean little when a person's luncheon choice must be made from a tunafish salad sandwich, a cheeseburger, or a seafood cocktail. The physician's own uncertainty about food choices, and his belief that fat-controlled diets are restrictive, may explain his reluctance to use them. This report discusses selection of food for diets in which the amount and kind of fat have been altered to reduce blood cholesterol content, with the suggestion of a new approach to the problem of changing food habits.

Evidence of a positive correlation between cholesterol content in the blood and occurrence of heart disease continues to accumulate. A recent report from Leren¹ shows benefit from reduction of blood cholesterol content by diet, in a group of Norwegian patients with previous myocardial infarctions. Those patients less than 60 years of age treated with a fat-modified-diet experienced fewer recurrences during a five-year period than those not treated with the diet. In the hope of decreasing cardiovascular disease, sensible medical and public health measures call for a program to reduce blood cholesterol levels. Evidence of benefit from dietary treatment was sufficient to warrant the American Heart Association² in 1965 to extend its dietary recommendations to the general public. Previously the Association suggested diets only for persons for whom the risk of myocardial infarction was high because of family history, high blood cholesterol levels, high blood pressure, and excessive weight.

Fat-controlled diets have become easier to follow during the last decade, as experience with them has been acquired both in the United States and in Europe. The American Heart Association distributes excellent diet booklets. Zukel³ has published additional information concerning their use.

TWO GENERAL TYPES OF DIET

Two general types of diet are suitable for reducing blood cholesterol content. One diet is a low-fat diet restricted in all kinds of fat, with most of its energy derived from foods high in carbohydrate. The other diet, the 'vegetable-oil food pattern,' is essentially the low-fat diet supplemented with vegetable oil. The oil may fully or partially replace most of the usual

animal fat in the American diet. Proper choice of the diet depends upon the type of serum lipoprotein abnormality.⁴⁻⁶

A large group of foods have little or no fat. Included in this low-fat group are all fruits except the avocado, all vegetables, cereals, simple breads, and sugars. These make up the bulk of foods used in the low-fat diet.

Fat-containing foods are from both animal and plant sources. Products of animal origin include meats, poultry, seafood, eggs, and all dairy products, including butter, and shortening such as lard. Products of plant origin are oils and fats obtained from seeds, nuts, and grains, which are used for shortening, margarine, and salad dressing. Those vegetable oils are often hydrogenated, making their fat composition more like that of animal fat.

In choosing fat-containing food products, the fat composition and its effect on cholesterol levels must be considered.⁷ Saturated fatty acids tend to raise blood cholesterol levels. Since these fatty acids predominate in all animal products, except fish, as much fat as possible is removed from animal products to convert them into low-fat foods. Animal products such as bacon, from which sufficient fat cannot be removed, are not used. Vegetable products such as coconut oil and cocoa butter are highly saturated and also must be avoided.

Dietary cholesterol tends to raise blood cholesterol levels. Because all animal tissue, including seafood, contains cholesterol, the amount of animal products eaten must be somewhat restricted. Egg yolk and liver are especially high in cholesterol, and they must be used in moderation.

Polyunsaturated fatty acids in the diet will lower blood cholesterol content. Consequently, the vegetable-oil food pattern has been designed to include oils especially abundant in polyunsaturated fatty acids. Fish fat is also highly unsaturated. Monounsaturated fatty acids do not affect blood cholesterol levels, so foods high in these fatty acids, mainly nuts, olives, and olive oil, may be included in moderation in the vegetable-oil diet when calories are not restricted.

FOOD SELECTION

The day's menu consists of products chosen from these various food categories: low-fat animal products, low-fat foods, polyunsaturated oils.⁸ In low-fat and in vegetable-oil diets, two servings of lean meat, fish, and poultry are included daily. The leanest cuts of beef, lamb, pork, and ham must be selected, cuts from the hindquarter and loin being the least fatty. Veal, poultry, and fish are especially low in fat. All visible, trimmable fat should be removed from animal tissues before they are cooked and served. An ounce of cheese or an occasional egg yolk may be eaten, but only as a

FAT-CONTROLLED FOODS FOR THE DINNER TABLE

substitute for a serving of meat in the menu. Two or more servings of low-fat dairy products, such as skim milk, low-fat cottage cheese, and sherbet are also recommended. In both diets, fruits, vegetables, breads, cereals, and sweets are included as desired. The low-fat foods balance the meals, satisfy the appetite, contribute nutrients; and they are a major source of calories, particularly in the low-fat diet.

In addition to these low-fat foods, the vegetable-oil food pattern includes highly unsaturated oils and products made from them, the amount depending on the diet prescription and the calories required. These oils are cottonseed, corn, soy, and safflower; all are readily available in the market. In addition to their use in baking and in frying foods, oils are used in making margarine, salad dressing, and mayonnaise. Margarine is used as a spread and also in food preparation.

The bases for choosing the appropriate foods are simple and clear-cut (*Table 1*). The diets are easy to follow when the meals have been prepared with the suitable raw ingredients. Menus may be simple or gourmet, adaptable to individual preferences and circumstances.

However, today's markets have an abundance of processed foods, such as mixes, fully prepared frozen entrees, baked goods, processed meat specialties, and ready-to-cook or to-bake items of all kinds. Choice from such foods is difficult—the amount and kind of fat in the commercially prepared products differ from item to item. A slice of bread contains a negligible amount of fat, while a sweet roll may have as much as a teaspoonful.

Suitability of the processed foods may be judged from the lists of ingredients which are printed on the labels in descending order according to the amounts present. From these the relative amounts and kinds of fat can be estimated. For example, a canned tomato soup label lists the following ingredients: tomatoes, enriched wheat flour, vegetable oil, onions, butter,

Table 1.—*Selection of foods for fat-controlled diets*

Food group	Low-fat diet, portion	Vegetable-oil diet, portion
Meat, fish, poultry (lean only)	2 servings daily	2 servings daily
Dairy products (skim milk)	2 or more servings daily	2 or more servings daily
Whole eggs	2 a week	4 a week
Animal fats, oils	None	None
Vegetable oils: cottonseed, corn, soy, safflower	None	4 to 7 tbsp., depending on caloric intake
Fruits and vegetables	As desired	As desired
Low-fat breads, cereals	As desired	As desired
Sugars and sweets	As desired	As desired

salt, sugar, natural seasonings, vitamin C; the amount of vegetable oil is less than that of the flour used for thickening and therefore is small. Most of the fat is an oil; butter is used as a flavoring, so is minimal. The nutrient composition listed by the manufacturer indicates that there is less than a third of a teaspoon of fat per serving.

Selection of margarine is most difficult because it must be highly unsaturated. Acceptable margarines are those made of corn or of safflower oil and are of a consistency to require packaging in a tub or can; they have from 40 to 60 percent polyunsaturated fatty acids. Special margarines with from 28 to 40 percent polyunsaturated fatty acids are firm enough to form sticks or prints. Guidelines for purchasing a highly unsaturated product are difficult to make. Safflower-oil margarines of soft consistency are likely to be the most unsaturated of the margarines.

If dietary changes are to be considered for large groups of healthy, active persons who require reduction of blood cholesterol content, suitable, processed foods will have to be readily available, and the day's food plan will have to be flexible. With this circumstance in mind, a year's study was conducted using commercially prepared fat-controlled foods.⁹ Fifty persons participating in the study were not required to follow a diet plan but ate special fat-modified foods freely along with the usual low-fat products. Only the number of eggs was limited. As a result of this dietary pattern, blood cholesterol content was reduced by an average of 14 percent. These studies demonstrated that appropriately fat-controlled modified foods can maintain low blood cholesterol content without rigid dietary plans. This approach to controlled-fat intake by changing the food products themselves, rather than teaching new food patterns, is a practical, effective approach to the dietary factor in regard to cardiovascular disease. A similar plan with comparable results was carried out during the National Diet-Heart Study, recently reported.¹⁰

SUMMARY

Fat-controlled diets may be followed with pleasure when foods are chosen from groups of products similar in kind and in amount of fat. A variety of foods may be chosen from low-fat animal products, low-fat foods, and polyunsaturated oils as indicated in the diet pattern. Labels on processed foods facilitate selection. Meals may be simple or epicurean, depending on individual preferences and circumstances. Food habits can be easily modified by substituting fat-controlled foods for those highly saturated fat products commercially produced. Increased availability of fat-controlled modified foods in the market would be a boon to those following these diet patterns.

FAT-CONTROLLED FOODS FOR THE DINNER TABLE

REFERENCES

1. Leren, P.: The effects of plasma cholesterol lowering diet in male survivors of myocardial infarction; a controlled clinical trial. *Acta Med. Scand. suppl.* **466**: 1-92, 1966.
2. Diet and heart disease. Report of the Committee on Nutrition authorized by the Central Committee for Medical and Community Program of the American Heart Association. Amer. Heart Assn., New York, N. Y., 1965, 4 p.
3. Zukel, M. C.: Fat-controlled diets. *Amer. J. Clin. Nutr.* **16**: 270-276, 1965.
4. Brown, H. B., and Page, I. H.: Variable responses of hyperlipemic patients to altered food patterns. *J.A.M.A.* **173**: 248-252, 1960.
5. Lewis, L. A.; Brown, H. B., and Page, I. H.: Long term effects of fat-controlled diets on hyperlipemic patients. Presented at the Seventh International Congress of Nutrition, Hamburg, Aug. 3 to Aug. 10, 1966.
6. Fredrickson, D. S.; Levy, R. I., and Lees, R. S.: Fat transport in lipoproteins—an integrated approach to mechanisms and disorders (Continued). *New Eng. J. Med.* **276**: 148-156; 215-224; 273-281, 1967.
7. Keys, A.; Anderson, J. T., and Grande, F.: Serum cholesterol response to changes in the diet. I. Iodine value of dietary fat versus 2S-P, p. 747-758; II. The effect of cholesterol in the diet, p. 759-765; III. Differences among individuals, p. 766-775; and IV. Particular saturated fatty acids in the diet, p. 776-787; *in Metabolism* **14**: 1965.
8. Brown, H. B., and Farrand, M.: A Baedeker for fat-controlled diets. III. The diet recommendation, p. 492-493; B. Basic foods, p. 808-809; and VI. Oils, margarines and other processed foods, p. 914-915; *in Ohio Med. J.* **63**: 1967.
9. Green, J. G., and others: Use of fat-modified foods for serum cholesterol reduction. *J.A.M.A.* **183**: 5-12, 1963.
10. Diet-Heart Study Group: A report of the feasibility trials of the National Diet-Heart Study. *Circulation*: In press.