



10.

## *Fats in Food*

MANY PEOPLE have been confused and worried about the possible relation of fat in the diet to atherosclerosis and certain kinds of coronary heart disease. There have been many hastily formed, inaccurate theories, and these have led to some unsound dietary recommendations. This chapter is written especially to explain what we do and do not know about the part played by diet and by other factors in our daily living in relationship to this disease. It also suggests what we can do to take

advantage of the facts and leads that science has given us thus far.

First, a look at the normal aspects of fat in our diet: Fats are an important kind of food for all of us. In addition to adding variety and flavor to many foods, fats are concentrated sources of energy, suppliers of essential fatty acids, and carriers of vitamins A and D, E and K. Reasonable amounts of fat deposits are *needed* in the body to support and protect the vital organs and areas. A layer of fat under the skin is good insulation and protects the body from excessive loss of heat.

#### LINOLEIC ACID

One substance of particular importance which occurs in some fats is *linoleic acid*. (Chemically it is referred to as an essential unsaturated fatty acid.) Linoleic acid is needed for growth and reproduction, for a healthy skin, and for the body's proper use and storage of fat. A deficiency of linoleic acid interferes with the body's normal use of fat. The human body cannot make linoleic acid, so it must be supplied by the food we eat. Common foods which contain appreciable amounts of linoleic acid are the natural oils from corn, cottonseed, and soybean. Smaller amounts are found in peanut oil and poultry fat, and still smaller amounts in olive oil and pork fat. The fats of beef, lamb, milk, and coconut oil contain very little linoleic acid.



Margarines and the usual man-made shortenings differ widely in linoleic acid content, depending on the raw materials used and the extent to which hydrogen has been added to change some of the oils into solids

or semi-solids. Adding hydrogen, a process called hydrogenation, changes linoleic acid into a substance that cannot do for the body what linoleic acid does.

Our daily requirement for linoleic acid is not known exactly but it is relatively small. There is, however, a little less linoleic acid in the average American diet today than there was 30 years ago.

Now a look at some of the problems: As most people grow older a fatty substance may be deposited inside the walls of the blood vessels. If this deposit clogs the vessels and interferes with the flow of blood, the condition is called atherosclerosis (one kind of arteriosclerosis). Often, but not always, with atherosclerosis there is also an increase in blood pressure. If the interference with blood circulation is severe enough, especially in the vessels close to the heart or in the brain, the result is a heart attack or a stroke. Probably heredity plays some part in the susceptibility of a person to atherosclerosis.

## CHOLESTEROL

In the fatty deposits along the walls of the blood vessels there is a substance called *cholesterol*. Cholesterol is a normal constituent of blood, which the body uses in making other important substances it needs for normal functioning. Too much cholesterol in the circulating blood has been blamed for causing atherosclerosis and leading to heart attacks, but conclusive scientific evidence for this is lacking.

The amount of cholesterol in the blood of normal persons varies within wide limits. Not everyone who has more than an average amount of cholesterol in his

blood has atherosclerosis. Also not everyone who has atherosclerosis has more than an average amount of cholesterol in his blood.

The body makes cholesterol whether or not it is present in the food we eat, so the amount of cholesterol in the food we eat probably is not of major importance in determining the amount of cholesterol in our blood. Low cholesterol diets have received considerable attention but we have not yet been able to measure how useful they are. A diet low in cholesterol limits the selection of highly nutritious foods such as meat, eggs, cheese, and milk and can lead to an imbalance or a deficiency of nutrients.

There is some evidence that fats with a high content of linoleic acid may help to reduce high levels of cholesterol in the blood. However, we lack positive evidence that reducing the amount of cholesterol in the blood reduces the occurrence of atherosclerosis.



Studies with laboratory animals suggest that the way the body uses fat may be related to the kind of carbohydrate in the diet. When different kinds of carbohydrates were fed to rats, the more complex chemical units of starch seemed to permit the body's normal use of fat better than the simpler chemical units of sucrose (ordinary sugar), or of glucose (sometimes called dextrose and found in syrups and many other foods). These are only preliminary results and their application to human nutrition is yet to be proven. Studies of the average American diet over the last 50 years show a steady increase in the amount of sugar, and a decrease in the amount of starch.

## PERSONAL CONTROL

Research eventually will give us definite answers and detailed recommendations to help in the prevention and treatment of some of these difficulties. In the meantime we have many leads to things we can do to avoid or lessen trouble and to improve our resistance to abnormal conditions of any kind. Almost every phase of our living — food, weight, exercise, rest, and emotions — seems to be involved in some way directly or indirectly with atherosclerosis and coronary heart disease. They are all items over which we can have a good deal of control if we choose.

We *can eat* the kinds and amounts of food that science has proven we need in order to be well nourished — in other words a well-balanced diet. We *should not omit* any one kind of food, or *use any to excess*. For instance, using no corn or cottonseed or soybean oils would be omitting our chief source of linoleic acid. On the other hand, using too much of these concentrated sources of food energy would be adding calories unnecessarily.

We *can include* some kinds of fat in our diet each day to supply linoleic acid. The amount of linoleic acid in a tablespoon of a corn, cottonseed, or soybean oil, or in twice that amount of peanut oil or chicken fat, plus what is present in the other foods we eat, probably is a generous daily supply.

Salad and cooking oils made from corn, cottonseed, and soybean oils are available in most markets and are labelled as to the kind they contain. Ordinary cooking temperatures do not harm linoleic acid, but high tem-

peratures that cause any fat or oil to smoke are undesirable. Commercial dressings, such as mayonnaise and French dressing are made most often with one of these three oils or with blends of them.

We *can avoid* overeating for our level of physical activity and thus avoid excess calories and overweight. This means choosing our calories by the nutrient company they keep, and limiting our intake of foods which provide little except calories. Fortunately the foods which often are needed to improve the nutritional quality of our diets—milk and fruits and vegetables—are low in calories in relation to the other chief nutrients they supply.

We *can organize* our lives to include some regular physical activity that will use the larger muscles and keep them firm and agile. This needs to be more than the usual sitting, standing, walking a few steps, and then sitting again, that so many of us have as our daily routine. The activity may be as mild as walking or as strenuous as swimming but it should be suitable for our strength and vigor. The importance of exercise to good health and weight control has been discussed in Chapter 4 on Activity and Calories. We find evidence in the medical literature that persons whose muscles are in reasonably good condition are less likely to suffer from heart disease than those whose daily routine includes only very limited physical effort.

We *can strive* for emotional stability or balance. Emotions can influence every part of the body and the way it operates. Constant worry, tension, fatigue, apprehension, even too great or unrealistic ambitions, handicap both the mind and the body in functioning normally

with the greatest sense of well-being. Good nutrition at every age contributes to emotional stability.

Every one regardless of his age can profit from observing such common-sense rules as these for good health and good living.



