ARTIFICIAL ADIPOSE

RELATION TO ANOTHER APPLICATION

This application is a division of application No. 07/484,379 filed 23 Feb. 1990, now U.S. Pat. No. 5,100,688.

TECHNICAL FIELD OF THE INVENTION

This invention relates primarily to edible, artificial adipose products which, when added to meat, result in a meat product: which has lower cholesterol and/or saturated lipid contents than its conventional counterpart; which is juicier after preparation; and which is substantially indistinguishable from a freshly prepared, natural, comminuted meat product with an equivalent lipid content.

The term "adipose" as used in this specification refers to the natural complex of lipid and lipid bearing structural materials associated with meats. These materials include flavored oils and are generically referred to as fat.

In a second, and also important, aspect, the present invention relates to certain new and novel saccharide/-protein gels which are employed in the novel artificial adiposes disclosed herein and which can also be used to produce a variety of other new and valuable products.

BACKGROUND OF THE INVENTION

The adipose of edible meat consists of fat matrixed in membraned cells in such a way that it is not simply free fat but a natural composition exhibiting specific characteristics of its own. Chicken skin, the white portions of bacon, milk fat globules, and suet are good, representative examples.

In comminuted meat, such as hamburger and ground sausage, adipose is distributed throughout as a separate, distinct component of the meat. The association of adipose lipid and adipose tissue results in specific and distinct complexes which do not behave as lipids do by themselves. For example, hamburger and sausage adipose contains a great deal of the ultimate aroma and taste characteristics of prepared hamburger and sausage. And, it does not melt all at once like the lipid alone would do. When the meat is cooked, the lipid portion of its adipose tissue can be dissociated from the remaining, primarily proteinaceous parts only with difficulty and with the application of high concentrations of heat and pressure. Thus, fried bacon adipose and others, after cooking, still retain their essential shape and residual high concentrations of lipids. Cooked meat may be chopped into pieces and maintained at temperatures well above the melting point of the lipid contained in its adipose tissue as is common in cooking many food dishes; but the adipose will not melt; and it is still a distinct substance.

It is known to those in the food trade and consumers alike that hamburger and sausage lose their appeal from the viewpoints of mouth feel and flavor when their adipose content drops below certain limits. The range of fat in hamburger varies from a low of about 16 percent to a high of over 30 percent. As a rule, the leaner the hamburger, the more expensive it becomes. Therefore, a typical quality of hamburger served in a restaurant contains only 74 percent lean meat and 26 percent fat.

One large fast food company specializing in hamburgers also uses a ratio of 74 percent lean meat/26 percent fat. In its "fancier" hamburgers, the fat content is decreased to 24 percent, still one-fourth of the product.

According to consumer data gathered by the American Meat Institute, 1988 per capita ground beef sales were 28.7 pounds which equates to 7.054 billion pounds (population base of 245.8 million). This was approximately 39 percent of the total meat consumption (including processed meats).

Information provided by Texas A&M, released in 1988 and summarized in the following table, shows relative regional variations of lipids (fat) in hamburger (or ground beef).

TABLE

Region	Regular*	Lean*	Extra Lean*
Northeast & East	41%	37%	22%
Southeast	35	52	13
N. Central	21	38	41
S. Central	42	35	23
Mountain	68	23	9
West	37	37	26
Average	41	37	22

*Regular = 75% Lean/25% Fat
Lean = 80% Lean/20% Fat
Extra Lean = 85% Lean/15% Fat

Ground beef constitutes 51 percent of all beef sold.

The importance of eating only sound, nutritious food has been recognized to a degree that today's consumer accepts the necessity of judicious food selectivity. This results in many consumers rejecting or limiting consumption of some foods heretofore considered to be healthful and delicious with culinarily less desirable but more healthful foods. This awareness has resulted in a revolution of individual eating habits that is crossing traditional international and cultural barriers in a wave of change.

In Western culture where both qualitative and quantitative adequacy of food exists, the public concern centers on such aspects as disproportionate intake of fats; overly refined, calorically concentrated foods; and, in particular, specifically currently undesirable components of some foods, such as those components containing significant amounts of saturated fats and cholesterol. As a consequence, traditional foods such as whole cream, eggs, cheeses, marbled meats, lunch meats, frankfurters, sausages, and the like have suffered diminution in consumption roughly in proportion to the concentration of cholesterol believed to be contained in them by the consuming public.

Such reduction in consumption has in some instances been profound as is the case with eggs, for example. A per capita reduction by half or more in consumption of eggs over the past decade has been seen.

Reductions in consumption of roasts, steaks, and other cuts of beef have also been substantial.

Hamburger and sausage adipose contains significant amounts of cholesterol and is comprised of highly saturated fats. Both, according to current beliefs, are deleterious nutritional substances. The popular trend is avoidance or restriction of foods containing these materials.

It is clear from the foregoing and other examples that unsaturated fats and oils are preferred over more saturated ones and that cholesterol content constitutes the basis of a compelling consumer rejection of even traditionally highly prized foods with significant saturated fat contents.