

sion is extruded into the bath, typically in ribbons which are 15-25 mm wide and 2-8 mm thick and in the manner discussed above. These ribbons are left in the bath for 5-10 minutes, then drained and lightly salted with sodium chloride for taste enhancement.

From 0.2 to 2.0 gms of cholesterol reductase, cholesterol oxidase, or cholesterol esterase is added to the drained and salted ribbons. The enzyme reacts with the cholesterol present in even the leanest of beef, pork, and other meats to further reduce the cholesterol content of the meat.

The adipose is dried with forced air at about 38° C., then chopped into pieces and mixed with comminuted meat.

In the protocol just described, the bath is preferably kept at a temperature of 58° C. or higher. This is done to gelatinize the tapioca and to cross-link the plasma.

The artificial adipose described in this example turns clear when heated to above about 108°-110° C. As a result, this artificial adipose melts somewhat like natural adipose; and the lipids change from milky to clear. The gelatinized tapioca is clear, and the plasma does not occlude the adipose pieces. Thus, the adipose becomes transparent throughout the meat as the meat is cooked, seeming to disappear naturally. Unlike natural adipose, many of the adipose pieces remain as particles, though invisible because of transparency. As discussed above, this results in the cooked meat with which the adipose is mixed retaining juiciness which is otherwise normally lost as juices drain from the cooking meat.

Fresh ground beef containing less than 9% fat was separated into one 85 gm sample and one 100 gm sample and chilled.

Artificial adipose produced as described in this example and dried to about 5% moisture content (15 gms) was chopped into approximately 2-4 mm pieces resembling in appearance the chopped adipose naturally distributed in ground beef of approximately 23% fat content. The chopped adipose was chilled and mixed with the 85 gm sample of beef chilled chopped beef until evenly distributed, forming a second 100 gm sample. Both 100 gm samples were formed into patties and analyzed. The results were: the 100 gms chopped beef sample contained 69 mgs of cholesterol, and the 100 gms sample with chopped beef and artificial adipose contained 15.5 mgs of cholesterol. The patty containing artificial adipose was, therefore, reduced in cholesterol by 78%.

Blind tests have demonstrated the superiority of applicants' novel meat products over their conventional counterparts. In these tests, a hamburger product (NUTRABURGER) prepared in accord with the principles of the present invention and containing an artificial adipose as disclosed herein was compared with regular hamburger and lean hamburger.

The NUTRABURGER product had a total fat content of 23% with 14.5% of that fat being supplied by the artificial adipose. It was prepared as described in Example 10 and formulated as set forth in that table under the heading "Presently Preferred".

The tests are summarized in Table 1 below.

TABLE 1
NUTRABURGER™ SENSORY TESTS

PRODUCT	SIZE UNCOOKED	SIZE COOKED	AVERAGE RAW WT.	2 PATTIES AVERAGE GRILLED WT.	AVERAGE SCORES GRILLED PATTY				
					N/SLTD SLTD				
					J	F	J	F	AV
NUTRA/B,** 23%	4" x 4" x 1/2"	3 1/4" x 3 1/4" x 3/4"	100 gms.	86.27 gms.*	9.0	8.7	8.3	8.8	8.7
REG. H/B, 23%	4" x 4" x 1/2"	3" x 3" x 1/2"	100 gms.	81.37 gms.	9.3	9.3	8.3	7.3	8.5
LEAN H/B <9%	4" x 4" x 1/2"	3 1/4" x 3 1/4" x 1/2"	100 gms.	84.85 gms.	5.5	5.7	3.7	4.3	4.8

PRODUCT	AVERAGE SCORES 25 MINUTES					AVERAGE SCORES 40 MINS AFTER COOKING					AVERAGE TOTAL		
	N/SLTD SLTD					N/SLTD SLTD							
	J	F	J	F	AV	J	F	J	F	AV			
NUTRA/B,** 23%	8.8	9.2	8.3	8.3	8.7	8.2	8.2	7.7	7.7	8.0	8.4	8.5	8.5
REG. H/B, 23%	7.7	7.3	7.2	7.0	7.3	6.7	6.7	7.7	7.3	7.1	7.8	7.5	7.7
LEAN H/B <9%	4.2	4.0	3.8	3.5	3.5	3.5	2.7	3.2	3.0	3.1	4.0	3.9	4.0

PREPARED WITHOUT ADDITION OF SALT

TESTER	GRILLED, ***PATTY NO.			20 MINUTES AFTER GRILLING PATTY NO.			40 MINUTES AFTER GRILLING PATTY NO.		
	1 2 3			1 2 3			1 2 3		
	J	F	J F	J	F	J F	J	F	J F
1 (Female)	9-9	8-7	4-4	9-8	9-8	5-4	7-8	9-7	3-3
2 (Male)	8-8	8-7	3-5	8-8	6-7	6-6	9-8	8-7	4-5
3 (Male)	8-9	9-8	5-5	8-8	7-6	3-3	8-7	7-6	4-4
4 (Female)	9-9	8-7	4-6	8-9	7-7	5-4	8-9	8-8	3-4
5 (Female)	9-9	8-8	2-2	8-8	8-7	2-2	7-8	6-7	1-1
6 (Male)	7-9	9-7	4-4	9-9	6-7	2-2	7-6	6-5	4-1