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Fat Content of  
Ground Beef  
and Sausage 1987

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People in the United States consume about 4.2 ounces of red meat per day. Of this amount, 0.62 ounces is ground beef (1) and accounts for about 30% of all processed beef (2). Under Connecticut Regulations (3) ground beef can contain up to 30% fat. Other favorite meats are pork sausage which can contain up to 50% fat, and Italian sausage, which can contain up to 35% fat (4).

In 1982-83 we found the fat content of ground beef to range from 7 to 40% (5), and in 1985 it ranged from 6 to 32% (6). We have continued to test meats for compliance with State and Federal Regulations and now report results on ground beef and sausage samples collected in 1987.

For ground beef, Connecticut Regulations (3) are the same as Federal Regulations (4):

"Chopped beef or ground beef shall consist of chopped fresh and/or frozen beef with or without seasoning and without the addition of beef fat as such, shall not contain more than 30% fat and shall not contain added water, binders, or extenders. Hamburger shall consist of chopped fresh and/or frozen beef with or without the addition of beef fat as such and/or seasoning and shall not contain any added water, binders, or extenders."

If the label on ground beef specifies no fat content, then the meat must not contain more than 30% fat. If, however, the label states a specific amount of fat less than 30%, as, for example, "not more than 20% fat", then the meat must comply with the label. Merchants sometimes state on the label that the ground beef contains not less than a

certain percentage of lean. The interpretation of such labels by the Commissioner of Consumer Protection, based on Regulations (3) and Statutes (7) is that 100 minus the declaration of percent lean is equal to the percent fat. Thus, for example, a claim of not less than 80% lean means not more than 20% fat. If excess fat is found the product is misbranded under Connecticut Regulations (3) and Statutes (7).

Ground beef is sometimes labeled as "lean", "extra lean", or "diet lean" to imply a lower fat content, but no Connecticut Regulations pertain to such designations nor is there any way for the consumer to relate these designations to fat content. Ground beef is sometimes labeled as to cut of meat: for example, "ground chuck", "ground sirloin", or "ground round." No Connecticut Regulations pertain to such designations. Although chuck, sirloin, and round specify a particular cut of meat, once the meat is ground there is no way to determine the particular cut of meat used.

For sausage, Connecticut follows the Federal Regulations (4).

"Fresh pork sausage is sausage prepared with fresh pork or frozen pork, or both, but not including pork byproducts. The finished product shall not contain more than 50% fat. Fresh beef sausage is sausage prepared with fresh beef or frozen beef, or both, but not including beef byproducts. The finished product shall not contain more than 30% fat. Breakfast sausage is sausage prepared with fresh and/or frozen meat, or fresh and/or frozen meat and meat byproducts.

The finished product shall not contain more than 50% fat. Italian sausage products are uncured, unsmoked sausage containing at least 85% meat, or a combination of meat and fat, with the total fat content constituting not more than 35% of the finished product. Italian sausage also may be made with fresh and/or frozen pork, or pork and pork fat. Italian sausage also may be made with beef or beef and veal but shall be prepared so that fresh and/or frozen pork constitutes the major portion of the meat content required. Uncooked, smoked pork sausage shall not contain more than 50% fat. To facilitate chopping or mixing, water and ice may be used in an amount not to exceed 3% of the total ingredients used."

This Bulletin reports analyses of ground beef and sausage sold at retail stores and restaurants.

#### METHODS

Samples were collected from January 1, 1987 through December 31, 1987 by inspectors of the Food Division of the Connecticut Department of Consumer Protection. In all, 123 ground beef and 72 sausage samples were purchased and tested. Most samples were from retail stores, but a few were from restaurants and fast food outlets. Unless the label claimed a lower fat content, samples of ground beef were considered to be regular ground beef and subject to the regulation that they contain not more than 30% fat. Sausage was considered subject to the regulation that the product contain not more than 50% fat unless the label specifically indicated that it was Italian sausage and thus subject to the regulation that it contain not more than 35% fat. No beef sausage was tested.

Samples were delivered to the laboratory and either tested immediately or frozen until tested. Analyses were performed by methods described in Official Methods of Analysis (8). Fat is expressed as percentage of the finished product that was purchased.

Beef and pork contain muscle and

connective tissue as well as fat. When beef is ground, the product is particulate rather than homogeneous. Thus, there is some variability in samples. Because of this inherent variability, duplicate analyses for fat are always made and the results averaged. We found an average difference of one percentage unit between duplicates with a standard deviation about their mean of 0.9 percentage units. Because of the inherent variability in sampling and in analysis, only samples found to be greater than one percentage unit above the regulated standard or above the claim stated on the label were considered to contain excess fat.

#### RESULTS AND DISCUSSION

##### *Ground Beef:*

In Table 1 the fat contents of the 123 ground beefs tested, expressed as percentage of fresh weight of the finished product, are listed by vendor. Following the name of the vendor is the town where the merchant or restaurant is located. If it is a brand sold in many stores, the town is not indicated. The percentage of fat is then shown, and those with an excess of fat are followed by a plus sign (+). If a specific claim for fat was made it is shown followed by any label declaration pertaining to a cut of meat or designation as "lean", "extra lean", or "diet lean" implying lower fat content.

Among 123 ground beefs tested were 71 not specifying a fat content and thus subject to the regulation that they contain not more than 30% fat. These 71 ground beefs averaged 17.1% fat (Table 2). Also among the ground beefs were some labeled as "lean", "extra lean" or "diet lean" to imply a lower fat content and some labeled "ground chuck", "ground sirloin", or "ground round" to show cut of meat used. Samples labeled as lean averaged 18.6% fat, and those labeled as extra, diet or super lean 11.8% fat. Samples labeled ground chuck averaged 17.4% fat, ground sirloin, 13.2% fat, and ground round, 14.5% fat. Products specifying a cut of meat or implying lower fat content need only meet the requirement that the meat contain not more than 30% fat.

None of the 71 samples not claiming a fat

TABLE 1--FAT CONTENT OF GROUND BEEF

Vendor	Town	% Fat		Label declaration
		Found	Claimed	
A & P	Hamden	17.3		sirloin
A & P	Mystic	10.4		sirloin
A & P	Mystic	19.5	30	70% lean
A & P	Wethersfield	18.4		chuck
Abdow's Big Boy Restaurant	Enfield	22.3		
American Frozen Foods	Stratford	25.8		
Arby's Restaurant	Windsor Locks	23.3		
Beit Bros. Market	Dayville	18.1	23	73% lean
Beit Bros. Market	Dayville	13.8+	10	90% diet lean
Beit Bros. Market	Dayville	16.8	18	round, 82% lean
Bloomfield Market	Bloomfield	15.8		round, lean
Bonanza Restaurant	Enfield	27.1		
Burger King	Winsted	22.0		pattie
Center Food Store	North Haven	7.1		
City Line Distributors	Bridgeport	23.5		
Colonial Market	Mystic	19.8		chuck
Colonial Market	Mystic	15.3		round
Concetto & Jerry's Restaurant	Winsted	9.0		
Crown Supermarket	West Hartford	19.1		chuck
Dairy Queen	Rocky Hill	24.9		
Denny's Restaurant	Wethersfield	26.1		
Dinova's Four Corners Store	Middlebury	15.9		chuck
Edwards Food Warehouse	Manchester	8.6	10	diet lean patties
Edwards Food Warehouse	Manchester	26.4+	22	lean
Edwards Food Warehouse	Manchester	17.0	16	extra lean
Edwards Food Warehouse	Manchester	26.6	28	
Edwards Food Warehouse	Manchester	23.5+	22	78% lean
Edwards Food Warehouse	Manchester	23.5+	22	78% lean
Edwards Food Warehouse	Manchester	19.3	22	78% lean
Everybody's Market	New Haven	21.4		lean
Everybody's Market	New Haven	16.8		
Fairway Beef	Fairfield	9.5		
Fairway Beef	Fairfield	9.4		chuck
Farm Fresh Market	Meriden	21.0		
Ferraro's Food Center	New Haven	22.9		
Finast	Hartford	18.1	22	lean
Finast	Pawcatuck	14.9		
Finast	Pawcatuck	20.6		chuck patties
Finast	Windsor Locks	17.1	22	lean patties
Finast	Clinton	11.8+	10	90% diet lean
First National	Pawcatuck	9.5		diet lean
Fitzie's	East Granby	6.6		round, super lean
Food Mart	Rocky Hill	17.5	23	lean
Fowler's Market	Middlefield	18.4		chuck patties
Fowlers Market	Middlefield	24.6		
Friendly's Restaurant	Windsor Locks	22.5		
Glenwood Drive In	Hamden	14.4		

TABLE 1--FAT CONTENT OF GROUND BEEF (Continued)

Vendor	Town	% Fat		Label declaration
		Found	Claimed	
Grade "A" Supermarket	Darien	17.5		chuck
Grade "A" Supermarket	Darien	15.9		round
Gran Central	New Canaan	17.5		round
Gran Central	New Canaan	12.3		sirloin
Gran Central Market	Milford	18.0		chuck
Grand Union	Norwalk	9.5	10	90% diet lean
Grand Union	Stratford	12.9	25	75% lean
Grand Union	Norwalk	18.8	25	75% lean
Greenfields	Plainville	11.5+	10	sirloin, 90% lean
Greenfields	Plainville	13.3+	10	90% diet lean
Greenfields	Plainville	10.3	10	sirloin, 90% lean
Gresco's Superette	Meriden	11.8		
Home Market	Naugatuck	9.8		
Italia Importing Co.	New Haven	17.4		
Jones Hill Supermarket	West Haven	19.3		chuck
L'Expo Restaurant	Enfield	15.6		
McDonalds	Winsted	20.3		pattie
Meat Land	East Haven	15.8		
Michael's Market	Danielson	17.0		chuck, lean
Michael's Market	Danielson	14.9		round, extra lean
Michael's Market	Danielson	17.6		
Mott's Shop Rite	Manchester	14.1+	13	87% super lean
Mott's Shop Rite	Manchester	21.1+	20	80% lean
Mott's Shop Rite	Manchester	18.4	20	80% lean
Mott's Shop Rite	Manchester	8.9	13	
Oliver's Market	Prospect	12.1		chuck, extra lean
Pathmark	Hamden	15.8		chuck
Pathmark	Norwalk	19.9	20	80% lean
Pathmark	Norwalk	15.3	15	85% lean
Pathmark	Stratford	17.4	20	80% lean
Pats IGA	Wolcott	18.0		chuck
Penfield Packing Co.		26.0		
Porter's Market	Watertown	19.9		chuck
Purity Supreme Supermarkets	Billerica, MA	19.0	21	porterhouse, 79% lean
Romeo's Imports	New Haven	9.4		
Roy Rogers	Milford	27.0		
Roy Rogers	West Hartford	25.3		pattie
Shop Rite	Bloomfield	21.0	20	80% lean
Shop Rite	Bloomfield	9.9	12	super 88% lean
Shop Rite	Bristol	8.0	15	85% extra lean
Shop Rite	Enfield	8.6	12	super 88% lean
Shop Rite	Groton	10.0	12	88% super lean
Shop Rite	Groton	16.8	20	80% lean
Shop Rite	Wethersfield	17.0	20	80% lean
Stop & Shop	Fairfield	21.8		lean
Stop & Shop	Fairfield	14.3		extra lean
Stop & Shop	Fairfield	15.3		chuck, lean

Table 1--FAT CONTENT OF GROUND BEEF (Continued)

Vendor	Town	% Fat		Label declaration
		Found	Claimed	
Stop & Shop	Groton	13.6		extra lean
Stop & Shop	Hamden	18.9		chuck, lean
Stop & Shop	Hartford	19.4		lean
Stop & Shop	Norwalk	23.3		lean
Stop & Shop	Norwalk	14.6		extra lean
Stop & Shop	Stratford	21.4	25	75% lean
Super Finast	Fairfield	25.8+	22	lean
Super Finast	Fairfield	9.9	14	extra lean
Super Finast	Fairfield	14.8	16	extra lean
Super Finast	Fairfield	9.3	10	extra lean
Sussman's Giant Food	New Britain	17.8		chuck
Ted's Food Center	Suffield	16.1	22	chuck, 78% lean
The Shopping Bag	Bloomfield	15.0		round
Waldbaum's	Farmington	17.3	23	chuck, lean
Waldbaum's	Groton	17.6	23	
Waldbaum's	Groton	16.6	28	
Waldbaum's	Groton	11.6	17	extra lean, 17% fat
Waldbaum's	Groton	11.8	17	
Waldbaum's	Milford	22.5	28	
Waldbaum's	Trumbull	17.5	28	lean
Waldbaum's	Trumbull	17.6	23	chuck, lean
Waldbaum's	Trumbull	15.4	17	round, extra lean
Waldbaum's	Trumbull	17.4+	13	sirloin
Waldbaum's	West Hartford	14.0	13	sirloin
Walter Stewart's	New Canaan	19.4		chuck
Walter Stewart's	New Canaan	12.6		round
Watertown Meat Center	Watertown	23.6		chuck
Wayside Market	Naugatuck	22.8		
Wendy's	Hartford	23.6		patties

+ indicates excess amount of fat

A value under % Fat claimed indicates "not more than."

A value under % Fat label declaration indicates "not more than"  
and a label declaration of % lean indicates "not less than."



TABLE 2--AVERAGE FAT IN TYPES OF GROUND BEEF

Type	Number samples	% Fat	Range
Regular <sup>a</sup>	71	17.6	7.1-27.1
Lean	37	18.6	10.3-26.4
Extra, super, or diet lean	23	11.8	6.6-17.0
Ground chuck	23	17.4	9.4-23.6
Ground sirloin	7	13.3	10.3-17.3
Ground round	10	14.5	6.6-17.5

a) Samples subject to 30% fat allowance even if the label declares a cut of meat or implies lower fat content.

content exceeded the standard of 30% (Table 3). On the other hand, 11 of 52 claiming a fat content less than 30% exceeded their claim. For these 11 samples containing an excess of fat, the average excess was 18.5%. A comparison of conformity to regulated or claimed fat content in the present sampling with our sampling in 1982-1983 and 1985 is shown in Table 3. In all surveys including the present one, few or no samples not claiming a fat content had an excess of fat. On the other hand the percentage of samples claiming a fat content and exceeding the claim ranged from 8 to 11 percent in all surveys.

TABLE 3--COMPARISON OF ANALYSES OF FAT IN GROUND BEEF, 1987, 1985, AND 1982-83

Type	1987	1985	1982-83
	Number (% excess)	Number (% excess)	Number (% excess)
Regular	71(0)	115(0)	155(2)
Fat specified	52(11)	61(23)	48(42)
All samples	123(8)	176(8)	203(11)

#### Sausage:

The fat contents of the 72 sausages, expressed as percentage of fresh weight of the finished product, are listed in Table 4. If the product was made in the store, the town is

not listed. Those with an excess of water are followed by a # sign. Any label declaration follows. Forty three were designated as Italian sausage and subject to the 35% fat maximum allowance. Those without a label declaration and those not specifically designated as Italian are considered to be regular sausage and subject to the 50% fat maximum allowance.

All sausage products met the requirements for maximum allowable fat. The average percentage of fat among all products was 23%. Sausage not specifically labeled as Italian or with no label designation averaged 25% fat with a range from 5 to 47%. Italian sausage averaged 21% with a range from 12 to 32%. Eight samples contained an excess of water.

#### SUMMARY

The 123 ground beef and 72 sausage samples collected in retail stores and restaurants in Connecticut during 1987 were analyzed to determine if they met Connecticut and Federal Regulations pertaining to fat and water content.

Among 71 ground beefs subject to the regulation that they contain not more than 30% fat, the average fat content was 18% and none contained more than the 30% allowed. Among samples designating a specific fat content, 11 of 52 exceeded their declared amount by an average of 18.5%. Samples labeled as ground chuck averaged 17% fat, ground sirloin 13%, and ground round 15%. Samples labeled as lean averaged 19% fat and those labeled extra or diet lean, 12%. None of 72 sausage products contained an excess of fat. All labeled Italian were within the regulated requirement that they contain not more than 35% fat, and all those not labeled as Italian sausage had less than the 50% fat permitted under the regulations. Italian sausage averaged 21% fat and those not labeled as Italian, 25%. Eight samples of Italian sausage contained an excess amount of water.

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TABLE 4--FAT CONTENT OF SAUSAGE

Vendor	Town	% Fat Found	Label declaration
Abdow's Big Boy Restaurant	Enfield	43.1	
Arby's Restaurant	Windsor Locks	40.1	
Aresco's Superette	Meriden	18.6	
Burger King	Winsted	41.5	pattie
Butcher Boy Meat Market	East Hartford	27.8	
Cavallo's	Waterbury	14.5	
Colonial IGA	East Hampton	28.4	Italian, sweet
Colonial Market	Mystic	23.2#	Italian
Colonial Market	Mystic	22.6	Italian, sweet
Concetto & Jerry's Restaurant	Winsted	22.0#	
Concetto & Jerry's Restaurant	Winsted	18.8	Virginia, hot, smoked
D & D	Hartford	23.9	Italian, hot
Denny's Restaurant	Wethersfield	47.0	
DiBacco Food Imports	Hartford	22.0	Italian
Dinner Bell		28.1	pattie, pork
Dinova's Four Corners Store	Middlebury	18.8	Italian, sweet
Everybody's Market	New Haven	21.9	Italian, hot
Fairway Beef	Fairfield	19.5	Italian
Farm Fresh Market	Meriden	24.4	
Ferraro's Food Center	New Haven	15.3	Italian
Fitzie's	East Granby	19.9	
Food Mart	Rocky Hill	14.1	Italian, hot
Fowler's Market	Middlefield	22.5	Italian, hot
Fowler's Market	Middlefield	32.3#	Italian, hot
Friendly's Restaurant	Windsor Locks	39.8	
Giammarco's Market	Hartford	19.9#	Italian, sweet
Giammarco's Market	Hartford	20.6	Italian, sweet
Grade "A" Supermarket	Darien	21.4	Italian, sweet
Grand Union	Norwalk	20.9	Italian, sweet
Great American Hot Spot	Avon	15.3	
Home Market	Naugatuck	25.6	
Italia Importing Co.	New Haven	18.9	
L'Expo Restaurant	Enfield	10.3	
Lamberti's		22.9#	Italian
McDonalds	Winsted	32.6	pattie
Meat Land	East Haven	19.1	Italian
Michael's Market	Danielson	25.3	Italian, hot
Michael's Market	Danielson	24.0	Italian, sweet
Noel's Supermarket	Gales Ferry	20.3#	Italian, hot
Oliver's Market	Prospect	26.3	
P & M Italian Deli	Hartford	10.9	Italian, hot
Parks		40.9	
Pathmark	Norwalk	23.0	Italian, sweet
Pats IGA	Wolcott	11.3	
Perri		27.3	Italian, sweet
Perri		24.8	links, pork
Perri		26.6	Italian

TABLE 4--FAT CONTENT OF SAUSAGE (Continued)

Vendor	Town	% Fat Found	Label declaration
Perri		24.6#	Italian
Porter's Market	Watertown	20.8	Lithuanian
Primo		22.1	Italian
Romeo's Imports	New Haven	12.5	Italian
Roy Rogers	Hartford	41.3	pattie
Stop & Shop	Fairfield	25.4	Italian, hot
Stop & Shop	Groton	21.5	Italian, hot
Stop & Shop	Hamden	20.9	Italian
Stop & Shop	Hartford	17.9	Italian, sweet
Stop & Shop	Middletown	23.1	Italian, sweet
Stop & Shop	Norwalk	21.9	Italian
Stop & Shop	Willimantic	31.1	Italian, sweet
Stop & Shop	Willimantic	24.6	Italian, hot
Super Finast	Fairfield	23.8	Italian, pork
Ted's	Hebron	25.3	Italian, sweet
The Country Kitchen	New Hartford	17.0	pattie
Tri Town II	Colchester	22.5	Polish
Waldbaum's	Groton	17.3	
Waldbaum's	Groton	23.4	Italian, hot
Waldbaum's	Middletown	17.6	Italian, hot
Waldbaum's	Trumbull	19.3	Italian, sweet
Walter Stewart's	New Canaan	18.8#	Italian, sweet
Walter Stewart's	New Canaan	11.1	Italian, sweet
Watertown Meat Center	Watertown	16.8	
Wayside Market	Naugatuck	5.3	

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# indicates excess amount of water



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