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**Fat Content  
of Ground Beef  
and Sausage—1988**

BY LESTER HANKIN

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## SUMMARY

The 171 ground beef and 51 sausage samples collected in retail stores and restaurants in Connecticut during 1988 were analyzed to determine if they met Connecticut and Federal Regulations pertaining to fat and water content.

Among 68 ground beefs subject to the regulation that they contain not more than 30% fat, the average fat content was 17.7% and none contained more than the 30% allowed. Among samples designating a specific fat content, 17 of 103 exceeded their declared amount by an average of 24.2%. Samples labeled as ground chuck averaged 18.7% fat, ground sirloin 11.7%, and ground round 12.7%. Samples labeled as lean averaged 17.4% fat and those labeled extra or diet lean, 13.4%. None of 51 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 21.8% fat and those not labeled as Italian, 26.4%. Three samples of Italian sausage and two of ground beef contained excessive water and one sausage contained soy flour, an ingredient not permitted.

# Fat Content of Ground Beef and Sausage—1988

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Connecticut Regulations (Administrative Regulations) for ground beef are the same as the Federal Regulations (Code of Federal Regulations, 1988):

"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 (Administrative Regulations) and Statutes (CT General Statutes, 1989) 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 (Administrative Regulations) and Statutes (CT General Statutes, 1989).

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 (Code of Federal Regulations, 1988).

"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."

## METHODS

Samples were collected from January 1, 1988 through December 31, 1988 by inspectors of the Food Division of the Connecticut Department of Consumer Protection. In all, 171 ground beef and 51 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 indicated that it was Italian sausage and 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 (1984). 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 171 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. 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 171 ground beefs tested were 68 not specifying a fat content and thus subject to the regulation that they contain not more than 30% fat. These 68 ground beefs averaged 17.7% 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 17.4% fat, and those labeled as *extra*, *diet* or *super lean* 13.4% fat. Samples labeled *ground chuck* averaged 18.7% fat, *ground sirloin*, 11.7% fat, and *ground round*, 12.7% fat. Products only 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 68 samples not claiming a fat content exceeded the standard of 30% (Table 3). On the other hand, 17 of 103 claiming a fat content less than 30% exceeded their claim. For these 17 samples containing an excess of fat, the average excess was 24.2%. Two samples contained added water which is not allowed in ground beef.

A comparison of conformity to regulated or claimed fat

content in the present sampling with our sampling in 1982-1983, 1985, and 1987 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. For all samples the percentage of samples with an excess of fat remained fairly steady, but for those designating a fat content the percentage with an excess of fat declined by over one half in 5 years.

### *Sausage:*

The fat contents of the 51 sausages, expressed as percentage of fresh weight of the finished product, are listed in Table 4. If a brand is sold in many stores, the town is not listed. The percentage of fat found is then shown, and those with excess water are followed by a # sign and those with excess soy filler are followed by a ## sign. Any label declaration follows. Thirty 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 23.3%. Sausage not labeled as Italian or with no designation averaged 26.1% fat with a range from 10.4 to 50.4%. Italian sausage averaged 21.8% with a range from 12 to 32.3%. Three samples contained excess water and one contained soy, a filler not allowed in Italian sausage.

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Table 1. Fat Content of ground beef. + indicates excess fat; \* indicates excess water.

Vendor	Town	% fat found	% fat claimed	Label declaration
A & P	Manchester	13.4	19	round, 81% lean
A & P	Mystic	19.5	30	70% lean
A & P	Mystic	12.0		sirloin
A & P	Mystic	18.9	30	70% lean
A & P	Norwich	22.5	30	70% lean
A & P	Norwich	12.0*	15	sirloin, 85% lean
A & P	Norwich	14.1	15	sirloin, 85% lean
A & P	Wethersfield	12.7		round
A & P	Windsor	9.1	15	85% lean
A & P	Windsor	17.1	23	77% lean
A & P	Windsor	22.0	30	70% lean
American Eagle Truck Stop	Southington	20.8		
Amy Beth Brand	West Haven	25.8		patties
Arby's Restaurant	Southington	18.8		patties
Aresco's Superette	Meriden	11.8		
Burger King	Southington	22.8		patties
Chilis	Milford	20.8		
City Line Distributors	Stratford	27.9		patties
Colonial Market	Mystic	15.3		round
Davis IGA	Kent	7.6		sirloin
Davis IGA	Kent	9.3		round
Davis IGA	Kent	8.9		chuck
DeMezzo Farms	New Haven	30.4		
Edward's Food Warehouse	Enfield	7.0*	10	90% diet lean
Edward's Food Warehouse	Enfield	19.6	22	78% lean
Edward's Food Warehouse	Enfield	8.9	10	90% diet lean
Edward's Food Warehouse	Enfield	16.9	16	84% diet lean
Edwards Food Warehouse	Windsor Locks	26.6	28	72% lean
Ellington Supermarket	Ellington	27.9		chuck, lean
Ellington Supermarket	Ellington	12.0		round, lean
Everybody's	New Haven	16.8		
Finast	Avon	17.5	22	78% lean
Finast	Hartford	11.4+	10	90% diet lean
Finast	Hartford	10.8	10	90% lean
Finast	North Canton	17.3	28	72% lean
Finast	North Haven	12.3		extra lean
Finast	North Haven	9.3		
Finast	North Haven	21.1	28	72% lean
Finast	Vernon	12.4	16	extra lean
Finast Super Center	Bridgeport	23.3+	22	chuck, 78% lean
Finast Super Center	Bridgeport	18.8+	14	86% extra lean
Finast Super Center	Bridgeport	11.3+	10	90% diet lean
Finast Super Center	Bridgeport	18.1+	16	84% extra lean patties
Finast Super Center	Bridgeport	21.9	22	chuck, 78% lean
Finast Super Center	Bridgeport	19.9+	16	84% extra lean

Table 1. Fat Content of ground beef (Continued). + indicates excess fat; \* indicates excess water.

Vendor	Town	% fat found	% fat claimed	Label declaration
Finast Super Center	Bridgeport	19.6+	14	86% extra lean
Finast Super Center	Bridgeport	8.0	10	90% diet lean
Finast Super Market	Clinton	11.8+	10	90% diet lean
Finast Super Market	Clinton	11.8+	10	90% diet lean
Finast Super Market	Clinton	9.0	10	90% diet lean
Finast Super Market	Guilford	7.4	10	90% diet lean
First National	Niantic	10.6	10	90% ultra lean
First National	Pawcatuck	9.5		round, diet lean
Fitzgerald's Supermarket	Simsbury	12.6		
Fowler's Market	Middlefield	24.6		
Fresh Farm Market	Meriden	21.0		
Geissler's Supermarket	Windsor	14.6		chuck
Geissler's Supermarket	Windsor Locks	10.5	10	90% lean
Geissler's Supermarket	Windsor Locks	17.9		chuck
Gran Central Market	Stratford	18.9		chuck
Grand Union	Fairfield	14.1	20	80% lean
Grand Union	Fairfield	21.3	25	75% lean
Grand Union	Stratford	17.6	20	80% lean
Greenfield's	Newington	18.4+	10	sirloin, 90% diet lean
Greenfield's	Newington	12.9	15	round, 85% extra lean
Greenfield's	Newington	9.5	10	sirloin, 90% diet lean
Greenfield's	Newington	22.6+	20	chuck, 80% lean
Greenfield's	Newington	14.3	20	chuck, 80% lean
Greenfield's	Newington	12.8	15	round, 85% lean
Greenfield's	Newington	9.8	10	sirloin, 90% diet lean
Greenfield's	Plainville	20.5	20	80% lean
Greenfield's	Plainville	14.5+	10	90% diet lean
Greenfield's	Plainville	15.5	15	85% extra lean
Greenfield's	Torrington	22.0+	20	chuck, 80% lean
Greenfield's	Torrington	11.2	15	round, 85% lean
Greenfield's	Torrington	9.9	10	sirloin, 90% lean
Greenfield's	West Hartford	21.0	20	chuck, 80% lean
Greenfield's	West Hartford	6.5	10	sirloin, 90% diet lean
Greenfield's	Windsor	19.6+	15	85% lean
Greenfield's	Windsor	17.6	20	chuck, 80% lean
Greenfield's	Windsor	10.6	10	sirloin, 90% lean
Ground Round	Plainville	23.8		patties
Hartman's Supermarket	Vernon	8.4		sirloin
Hartman's Supermarket	Vernon	20.4		chuck
Heartland	Manchester	10.5	15	sirloin, 85% diet lean
Heartland	Newington	16.3	20	80% extra lean
Heartland	Newington	13.8	21	loin tails, 79% lean
Heartland	Newington	20.8	28	72% lean
Heartland	Vernon	19.8	20	80% lean
Home Market	Naugatuck	9.8		

Table 1. Fat Content of ground beef (Continued). + indicates excess fat; \* indicates excess water.

Vendor	Town	% fat found	% fat claimed	Label declaration
John's Import	Winsted	13.8		
Pathmark	Bridgeport	16.9+	15	round, 85% lean
Pathmark	Bridgeport	19.2	20	chuck, 80% lean
Pathmark	Bridgeport	9.9	10	sirloin, 90% lean
Pathmark	Bridgeport	18.3	20	chuck, 80% lean
Pathmark	Bridgeport	15.4	15	round, 85% lean
Pathmark	East Haven	17.9	20	80% lean
Pathmark	East Haven	7.8	10	90% lean
Pathmark	Hamden	19.8		
Pegson & Paulgard	Branford	11.1		chuck
Penfield Packing Co.	Bridgeport	23.6		patties
Ponderosa Steak House	Southington	21.5		steak, chopped
Porter's Market	Watertown	19.9		
Portland Country Market	Portland	17.6		
Purity Supreme	Wethersfield	13.9	15	85% diet lean
Red Apple Supermarket	Vernon	21.3		chuck
Red Apple Supermarket	Vernon	8.4		round
Roy Rogers	Southington	24.8		patties
Schwab's Market	Hartford	19.6		
Shop Rite	Bloomfield	14.3	16	sirloin, 84% lean
Shop Rite	Bloomfield	20.8		chuck
Shop Rite	Groton	10.0	12	88% super lean
Shop Rite	Groton	16.8	20	80% lean
Shop Rite	Groton	18.4	25	75% lean
Shop Rite	Groton	18.4	20	80% lean
Shop Rite	Torrington	13.1	20	85% lean
Shop Rite	Torrington	13.6	15	85% lean
Shop Rite	Torrington	27.4	27	73% lean
Shop Rite	Willimantic	11.5	15	85% extra lean
Shop Rite	Willimantic	20.4	20	80% lean
Shop Rite	Torrington	17.0	20	80% lean
Shop Rite	Torrington	12.0	15	85% lean
Shop Rite	Torrington	22.6		
Statewide Meats	New Haven	21.8		
Stop & Shop	Branford	14.3		chuck, lean
Stop & Shop	Enfield	12.6		extra lean
Stop & Shop	Fairfield	19.1		lean
Stop & Shop	Fairfield	14.5		
Stop & Shop	Hamden	23.6		chuck
Stop & Shop	Hartford	25.5		lean
Stop & Shop	Hartford	25.5		extra lean
Stop & Shop	Manchester	16.6		chuck, lean
Stop & Shop	North Haven	19.1		chuck, lean
Stop & Shop	North Haven	18.0		chuck
Stop & Shop	Stratford	23.5		lean

Table 1. Fat Content of ground beef (Continued). + indicates excess fat; \* indicates excess water.

Vendor	Town	% fat found	% fat claimed	Label declaration
Stop & Shop	Vernon	24.9		chuck
Stop & Shop	West Hartford	16.6		lean
Stop & Shop	West Hartford	17.3		extra lean
Stop & Shop	Westport	14.1		chuck, lean
Stop & Shop	Westport	15.5		extra lean
Stop & Shop	Westport	12.9		sirloin
Stop & Shop	Wilton	18.9		lean
Stop & Shop	Wilton	16.0		lean
Stop & Shop	Wilton	17.8		extra lean
Stop & Shop	Wilton	12.4		sirloin
Stop & Shop	Willimantic	14.5		extra lean
Stop & Shop	Willimantic	21.9		lean
TriTown Food I	Colchester	25.3	27	
Waldbaum's	Berlin	18.1	28	lean
Waldbaum's	Bloomfield	19.5	23	lean
Waldbaum's	Bloomfield	14.8+	13	sirloin
Waldbaum's	Bloomfield	19.1	23	lean
Waldbaum's	Bloomfield	14.9	17	extra lean
Waldbaum's	Branford	11.9	13	sirloin
Waldbaum's	Groton	12.6	13	sirloin
Waldbaum's	Groton	11.6	17	extra lean
Waldbaum's	Middletown	14.9	17	extra lean
Waldbaum's	Milford	25.6+	23	lean
Waldbaum's	North Haven	18.4		chuck
Waldbaum's	North Haven	13.1	13	sirloin, 87% lean
Waldbaum's	Southington	17.1	23	chuck, lean patties
Waldbaum's	Trumbull	22.1	23	chuck, lean
Waldbaum's	Trumbull	19.4	17	extra lean patties
Waldbaum's	Trumbull	12.6	13	sirloin
Waldbaum's	Trumbull	23.5	28	lean
Waldbaum's	Trumbull	15.8	17	round patties
Waldbaum's	Trumbull	13.8	13	sirloin patties
Waldbaum's	Westport	11.1	23	chuck, lean
Waldbaum's	Westport	11.9	17	round, extra lean
Waldbaum's	Westport	11.0	13	sirloin
Wyoming Supreme Beef	Huntville, WY	8.5	10	90% lean



Table 2. Average percent fat in categories of ground beef.

Type	Number samples	% Fat	Range
Regular ground beef <sup>a</sup>	68	17.7	7.6-30.4
Lean	74	17.4	8.5-27.9
Extra, super, or diet lean	40	13.4	6.5-19.9
Ground chuck	28	18.7	8.9-27.9
Ground sirloin	23	11.7	7.6-14.8
Ground round	13	12.7	8.4-16.9

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a. Samples subject to 30% fat allowance although they had a label declaration showing cut of meat or implying lower fat content.

Table 3. Comparison of analyses of fat in ground beef, 1988, 1987, 1985, and 1982-83.

Type	1988 No. samples (% excess) <sup>a</sup>	1987 No. samples (% excess)	1985 No. samples (% excess)	1982-83 No. samples (% excess)
Regular	68 (0)	71 (0)	115 (0)	155 (1.9)
Fat specified	103 (16.5)	52 (21.2)	61 (22.9)	48 (41.7)
All samples	171 (9.9)	123 (8.9)	176 (8.0)	203 (11.3)

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<sup>a</sup> % excess indicates percentage of samples with an excess amount of fat

Table 4. Fat content of sausage. \* indicates excess water; \*\* contains soy flour which is not allowed

Vendor	Town	% fat found	Label declaration
A & P	Windsor	20.0	Italian, sweet
A & P	Windsor	19.1	Italian, hot
American Eagle Truck Stop	Southington	50.4	Old Smithfield
Aresco's Superette	Meriden	18.6	
Burger King	Southington	37.3	patties
Carbone's Market	Torrington	19.6	hot
Cavallo's Town Plot	Waterbury	14.5	
City Line Distributors	Stratford	41.6	links
Colonial Market	East Lyme	24.3	Italian, hot
Colonial Market	Mystic	22.6	Italian, sweet
Colonial Market	Mystic	23.6	Italian, sweet
DeYulio's Sausage Co.	Stamford	27.6	Italian, hot
Dinner Bell		28.1	patties
Edwards Food Warehouse	Orange	19.8	Italian, sweet
Everybody's	New Haven	18.5	Italian
Fitzergald's Supermarket	Simsbury	23.0	ground
Fowler's Market	Middlefield	32.3*	Italian, hot
Fowler's Market	Middlefield	21.6	Italian, sweet
Fowler's Supermarket	Coventry	20.4*	Italian
Fresh Farm Market	Meriden	24.4	
Geissler's Supermarket	Windsor Locks	19.9	Italian, hot
Geissler's Supermarket	Windsor Locks	24.3	Italian, sweet
Grand Union	Stratford	17.0	Italian, hot
Greenfield's	Torrington	19.5	hot
Greenfield's	Torrington	17.3	patties, sweet
Hartman's Supermarket	Vernon	19.5	Italian hot
Heartland, Sausage Kitchen	Newington	30.8**	Italian
Heartland, Sausage Kitchen	Newington	27.6*	breakfast
Home Market	Naugatuck	25.6	
John's Import	Winsted	20.8	links
Napoli's	New Haven	12.0	Italian
O'Fiore	Alliance, OH	26.5	Italian
Papa Gino's	Southington	31.3	Italian
Pathmark	East Haven	24.5	Italian, sweet
Porter's Market	Watertown	20.8	Lithuanian
Portland Country Market	Portland	10.4	
Stop & Shop	Branford	17.0	Italian sweet
Stop & Shop	Hamden	14.6	Italian
Stop & Shop	North Haven	22.1	Italian, sweet
Stop & Shop	North Haven	20.1	Italian, sweet
Stop & Shop	Stratford	24.0	Italian, sweet
Triple M	Manchester, NH	45.9	pork
TriTown Food I	Colchester	24.6	Italian, hot
Waldbaum's	Bloomfield	16.6	Italian hot
Waldbaum's	Bloomfield	14.5	Italian sweet
Waldbaum's	Branford	24.8	garlic & cheese
Waldbaum's	Groton	18.5	Italian
Waldbaum's	Groton	23.4	Italian, hot
Waldbaum's	Milford	27.6	Italian, sweet
Waldbaum's	North Haven	21.0	Italian
Waldbaum's	North Haven	19.0	Italian, sweet



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