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Fat Content of
Ground Beef
and Sausage
1990

BY LESTER HANKIN AND VIPIN AGARWAL

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SUMMARY

Twenty-seven of 156 ground beef samples contained excess fat. None of 57 sausage products contained an excess of fat. One sausage sample contained an excessive amount of water. Four of 15 miscellaneous samples, including ground turkey and chicken, contained an excess of fat.

Fat Content of Ground Beef and Sausage--1990

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Ground beef and sausage must meet Connecticut Regulations, which follow the Federal Regulations (Code of Federal Regulations 1990). Previous reports of analysis of ground beef and sausage (Hankin and Agarwal 1990, Hankin 1989, Hankin 1988, Hankin 1985, Hankin and Hanna 1983) have described these regulations in detail. Briefly, ground beef cannot contain more than 30% fat. If the label specifies a fat content, however, the product must comply with the label claim. For example, some labels state *not less than 80% lean*. This is interpreted to mean *not more than 20% fat* (Administrative Regulations). If excess fat is found, the product is misbranded (CT General Statutes 1989). The terms *lean*, *extra lean*, and *diet lean* imply a lower fat content and there are now Connecticut Regulations relating these terms to fat content (Regulations 1990). These regulations which went into effect in October 1991 and shown in Table 1, also apply to products labeled as ground chuck, sirloin, or round.

Sausage cannot contain more than 50% fat. Sausage labeled as *Italian*, however, cannot contain more than 35% fat. Sausage cannot contain more than 3% added water, usually added as ice to facilitate chopping or mixing (Code of Federal Regulations 1990).

METHODS

Samples were collected from January 1, 1990 through December 31, 1990 by inspectors of the Food Division of the Connecticut Department of Consumer Protection. In all, 156 ground beef, 57 sausage samples, and 15 miscellaneous samples were 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

Table 1. Number of 1990 samples not meeting new regulations for fat in ground beef.

Category	Maximum % fat ¹	Exceeding regulations ²
Lean	22	2
Extra lean	15	6
Diet lean	10	3
Ground chuck	20	6
Ground round	15	3
Ground sirloin	13	2

1 If a product is labeled in two different categories, i.e. extra lean and ground sirloin, the minimum fat content listed prevails, i.e. ground sirloin.

2 These are noted in Table 2 with an asterisk (*) in the % fat found column.

regulation that it contain not more than 35% fat.

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 (1990). Fat is expressed as percentage of the product that was purchased.

Beef and pork contain muscle and connective tissue as well as fat. When these are ground, the product is particulate rather than homogeneous. Thus, there is some variability among 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 an excess of fat.

RESULTS AND DISCUSSION

Ground Beef: The fat contents of the 156 ground beefs tested are shown in Table 2. Fat content is expressed as percentage of fresh weight of the finished product. 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 used or designation as *lean*, *extra lean*, or *diet lean*, implying lower fat content.

Among the 156 ground beefs tested were 61 not specifying a fat content and thus subject to the regulation that they contain not more than 30% fat. These 61 ground beefs averaged 17.2% fat. 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 19.3% fat, those labeled as *extra* or *super lean* 15.1% fat, and those labeled as *diet*, 11.3%. Samples labeled *ground chuck* averaged 18.2% fat, *ground sirloin*, 12.5% fat, and *ground round*, 12.6% fat. Before the 1990 Regulations went into effect, products that specified a specific cut of meat or implying lower fat content without stating a fat content only needed to meet the requirement that the meat contain not more than 30% fat.

None of the 61 samples not claiming a fat content exceeded the standard of 30% (Table 2). On the other hand, 27 of 95 claiming a fat content less than 30% exceeded their claim. For these samples the excess ranged up to 18%.

Even though new regulations pertaining to fat content went into effect in October 1990 (Table 1), forced compliance did not begin until January 1, 1991 in order to allow vendors to understand the regulations, to change labeling procedures, and to adequately comply. In Table 2, for the samples tested in 1990 that contained labeling indicating a cut of meat or implying a lower fat content, 22 samples would not have complied with the new regulations. These samples are indicated in Table 2 with an asterisk (*) in the % fat found column. A summary of these findings is shown in Table 1. *Extra lean* and *ground chuck* categories each accounted for 27% of those not meeting the new regulations.

Sausage: The fat contents of 57 sausage samples are shown in Table 3. Fat is expressed as percentage of fresh weight of the finished product.

All sausage products met the requirements for maximum allowable fat. The average percentage of fat among all products was 22.6%. Sausage not specifically labeled as Italian, or with no label designation, averaged 24.1% fat with a range from 12 to 39.3%. Italian sausage

averaged 21.6% with a range from 8.8 to 27.8%. One sample contained an excess of water.

Miscellaneous products: Fifteen miscellaneous products tested for fat content are listed in Table 4. These included ground turkey, chicken, pork, and kielbasa. Four did not meet their label claim. Two of these were ground turkey, one was ground chicken, and one was a kielbasa.

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Table 2. Fat content of ground beef.

Vendor	Town	Fat, %		Label declaration
		Found	Claimed	
A & P	Mystic	18.0+ *	15	round, nlt 85% lean
A & P	Mystic	10.2	15	nlt 85% lean
A & P	Old Lyme	22.3*	23	chuck, nlt 77% lean
A & P	Storrs	22.3	23	chuck, nmt 23% fat
A & P	Torrington	21.3	30	nlt 70% lean
A & P	Windsor	20.6*		sirloin
A & P	Windsor	25.9		
A & P	Windsor	18.0		
A & P	Windsor	28.0	30	30% fat
A & P	Windsor	11.0	13	sirloin, nmt 13% fat
A & P	Windsor	26.1+ *	22	lean, nmt 22% fat
A & P	Windsor	21.5+ *	10	chuck, nmt 20% fat
A & P	Wethersfield	29.8		
A & P	Wethersfield	8.9		
Andy's	Simsbury	14.4		round
Andy's	Simsbury	10.3		diet
Andy's	Simsbury	19.8		chuck
Arby's	Orange	24.9		patty
Beechwood Supermarket	Shelton	14.3		chuck
Big Y Shop Rite	Norwich	20.8		
Big Y Shop Rite	Norwich	16.9		lean
Burger King	Milford	25.3		
Chef's Choice	Simsbury	24.1		
Colonial Market	Essex	21.0		lean
Edward's	Manchester	19.4	22	lean, nmt 22% fat
Edward's	Manchester	14.9	15	extra lean, nlt 85% lean
Edwards	Enfield	17.5	22	lean, 78% lean
Edwards	Manchester	16.5*	16	extra lean, nlt 84% lean
Everybody's Market	Waterbury	17.5		
Ferraro's	Bristol	22.0	30	<30% fat
Ferraro's	Bristol	9.1	10	diet lean, <10% fat
Ferraro's	Bristol	17.1	22	lean, <22% fat
Ferraro's	Bristol	18.4+	15	extra lean, <15% fat
Finast	Brooklyn	13.8+	10	extra lean, nlt 90% lean
Finast	Brooklyn	9.0	10	diet lean, nlt 90% lean
Finast	Stratford	9.4	10	diet lean, 90% lean
Finast	Stratford	19.8	22	lean, 78% lean
Finast	Stratford	18.5+ *	16	extra lean, 84% lean
Finast	Stratford	18.0+ *	16	extra lean, 84% lean
Finast	Stratford	10.3	16	extra lean, 84% lean
Fitzerald's	Simsbury	11.1	13	sirloin, nmt 13% fat
Fitzerald's	Simsbury	10.5	15	round, nmt 15% fat
Fitzerald's	Simsbury	25.8+ *	20	chuck, nmt 20% fat
Food Mart	Bristol	25.1		veal
Food Mart	Bristol	15.1	15	extra lean, nlt 85% lean
Food Mart	Bristol	15.1+ *	13	sirloin
Food Mart	Farmington	14.5+ *	10	sirloin, diet lean, nmt 10% fat
Geissler's	South Windsor	17.4	20	nmt 20% fat
Geissler's	South Windsor	9.4	10	diet lean, nmt 10% fat
Highland Park Market	Coventry	9.5	10	sirloin, diet lean, nmt 10% fat

Table 2. Fat content of ground beef (continued).

Vendor	Town	Fat, %		Label declaration
		Found	Claimed	
Highland Park Market	Manchester	8.4		sirloin
Highland Park Market	Manchester	11.4		
J. J. Noels Groceries	Colchester	17.6+*	15	round, nmt 15% fat
Kitty' Deli	East Granby	18.3		
Klarides Supermarket	Derby	13.3		
Klarides Supermarket	Seymour	17.1		chuck
LaBonne's Epicure	Farmington	9.1+	5	round, nmt 5% fat
LaBonne's Epicure	Farmington	22.6+*	15	chuck, nmt 15% fat
LaBonne's Epicure	Farmington	12.8+	10	chuck, extra lean, nmt 10% fat
Manchester Packing Co.	Manchester	27.0		patties
Manchester Packing Co.	Manchester	24.5		patties
McDonalds	Milford	21.4		patties
McDonalds	Milford	21.4		patties
Me-Ma's Too	Litchfield	27.3		
Michael's Market	Killingly	14.5		
Mistick Village Market	Mystic	11.1		sirloin
Monroe Supermarket	Monroe	13.9		chuck
Mr. Sizzle	Milford	22.4		patties
Noel's Supermarket	Gales ferry	12.8	20	chuck, nmt 20% fat
Papa Ginos	Wethersfield	22.8		patties
Pathmark	Danbury	17.6	20	chuck, nlt 80% lean
Pathmark	Danbury	6.4	10	sirloin, nlt 90% lean
Popey's	Morris	13.8		
Price Busters	Torrington	7.5		chuck, extra lean
Prime Market	New Haven	9.0		
Purity Supreme	Wethersfield	12.8	20	extra lean, nlt 80% lean
Purity Supreme	Wethersfield	21.2	24	lean, nlt 76% lean
Purity Supreme	Wethersfield	17.1*	20	extra lean, nlt 80% lean
Roy Rogers	Milford	28.6		patty
Shop Rite	Bristol	13.6		veal
Shop Rite	Bristol	16.0+*	13	sirloin
Shop Rite	Bristol	15.9	20	lean, nlt 80% lean
Shop Rite	Bristol	15.9	15	round extra lean, nlt 85% lean
Shop Rite	Bristol	21.5	27	nlt 73% lean
Shop Rite	Bristol	16.9	17	lean, nlt 83% lean
Shop Rite	Bristol	18.4	22	lean, nlt 73% lean
Shop Rite	Bristol	12.9		sirloin
Shop Rite	Groton	11.5	12	super lean, nlt 88% lean
Shop Rite	Meriden	12.1	12	88% fat free
Shop Rite	Meriden	11.4	15	85% fat free
Shop Rite	Wethersfield	18.0	27	lean, nmt 73% fat
Shop Rite	Willimantic	15.9	20	nlt 80% lean
Shop Rite	Willimantic	21.6	27	nlt 73% lean
Shurfine	Simsbury	15.5	20	chuck, nlt 80% lean
South Side Market	Bristol	12.4		chuck, extra lean
South Side Market	Bristol	12.8		sirloin
Stop & Shop	Bristol	12.9	13	sirloin, nmt 13% fat
Stop & Shop	Bristol	20.9	27	nmt 27% fat
Stop & Shop	Bristol	16.9	22	lean, nmt 22% fat
Stop & Shop	Bristol	13.1	15	extra lean, nmt 15% fat

Table 2. Fat content of ground beef (continued).

Vendor	Town	Fat, %		Label declaration
		Found	Claimed	
Stop & Shop	Danbury	22.6		lean
Stop & Shop	Danbury	19.9		extra lean
Stop & Shop	East Hartford	18.6+	15	extra lean
Stop & Shop	East Haven	13.4	15	extra lean, nlt 85% lean
Stop & Shop	East Haven	11.1	13	sirloin, nlt 87% lean
Stop & Shop	Enfield	14.1	16	extra lean, nmt 16% fat
Stop & Shop	Enfield	18.8	25	lean, nmt 25% fat
Stop & Shop	Enfield	12.4	16	nmt 16% fat
Stop & Shop	Groton	21.5	25	lean, nmt 25% fat
Stop & Shop	New Britain	21.5*		extra lean
Stop & Shop	North Haven	15.9		chuck
Stop & Shop	North Haven	16.4		extra lean
Stop & Shop	Waterford	15.8		sirloin
Stop & Shop	Willimantic	14.0		extra lean
Taylor Packing Co.	Wyalusing, PA	7.1	10	90% fat free
Ted's Foods	Hebron	9.0	15	round, nlt 85% lean
Ted's Foods	Hebron	13.8+	10	round, patties, nmt 10% fat
The Greens	Bridgeport	28.4		patties
Thurston Foods	Wallingford	22.1		patties
Tri Town Foods	Colchester	13.1	14	round, nmt 14% fat
Trotta's	Sharon	5.6	10	round, nlt 90% lean
Trotta's	Sharon	18.5	20	chuck, nlt 80% lean
Waldbaum's	Bloomfield	11.9	23	nmt 23% fat
Waldbaum's	Bloomfield	20.8	28	nmt 28% fat
Waldbaum's	East Haven	12.8+*	10	diet lean, nlt 90% lean
Waldbaum's	East Haven	20.6+	17	lean, nlt 83% lean
Waldbaum's	Enfield	19.4	23	lean, nmt 23% fat
Waldbaum's	Enfield	13.6	17	extra lean, nmt 17% fat
Waldbaum's	Groton	15.6		round, extra lean
Waldbaum's	Mansfield	24.6+*	23	chuck, lean, nmt 23% fat
Waldbaum's	Mansfield	20.9	23	chuck, lean, nmt 23% fat
Waldbaum's	Meriden	17.3		
Waldbaum's	Meriden	18.8		
Waldbaum's	Meriden	9.0		
Waldbaum's	Meriden	23.3*	23	chuck, nmt 23% fat
Waldbaum's	Meriden	14.6+	13	sirloin, nmt 13% fat
Waldbaum's	Meriden	19.1+*	10	diet lean, nmt 10% fat
Waldbaum's	Meriden	14.8+	10	nlt 90% lean
Waldbaum's	Meriden	19.8+	15	nlt 85% lean
Waldbaum's	Meriden	8.3	10	diet lean, nlt 90% lean
Waldbaum's	Meriden	10.3	10	diet lean, nlt 90% lean
Waldbaum's	Meriden	11.6+	10	diet lean, nlt 90% lean
Waldbaum's	Meriden	13.6+	10	diet lean, nlt 90% lean
Waldbaum's	North Haven	18.4*		extra lean
Waldbaum's	North Haven	12.6		sirloin
Waldbaum's	Trumbull	19.6*		round, extra lean
Waldbaum's	Trumbull	17.7	23	chuck, lean, nmt 23% fat
Waldbaum's	Trumbull	13.0	13	sirloin, nmt 13% fat
Watertown Meat Center	Watertown	8.0		round
Watertown Meat Center	Watertown	19.4		chuck

Table 2. Fat content of ground beef (continued).

Vendor	Town	Fat, %		Label declaration
		Found	Claimed	
Wayside Market	Naugatuck	15.4		
Waz's IGA	Canton	20.0	20	chuck, nlt 80% lean
Waz's IGA	Canton	9.9	10	round, nlt 90% lean
Waz's IGA	Canton	8.3+	5	sirloin, nlt 95% lean
Woodbury Village Market	Woodbury	13.5		lean
Woodbury Village Market	Woodbury	8.5		round, extra lean

+ indicates excess amount of fat

* indicates would not meet current regulations

nmt = not more than

nlt = not less than

Table 3. Fat content of sausage.

Vendor	Town	% fat found	Label declaration
A & P	Old Lyme	26.5	Italian
A & P	Storrs	20.0	Italian
Andy's	Simsbury	26.0	Italian, hot
Andy's	Simsbury	24.1	Italian, sweet
Beef Plus	Waterbury	12.0#	
Big Y Shop Rite	Norwich	23.8	Italian, hot
Bob's Village Market	Goshen	16.6	hot
Bob's Village Market	Goshen	19.1	sweet
Burger King	Milford	39.3	
Colonial Market	Essex	29.8	Italian
De Costa	Woburn, MA	19.0	Italian, sweet
DeYulio's Sausage Co.	Stamford	26.1	Italian
Domino's Pizza	Bridgeport	31.4	
Edwards	Enfield	21.4	Italian, pork
Everybody's Market	Waterbury	27.8	Italian, sweet
Family Pride	Union City, NJ	37.5	
Fitzgerald's	Simsbury	21.8	Italian, sweet
Food Mart	Bristol	21.6	Italian, hot
Geissler's	South Windsor	21.5	Italian, pork, hot
Geissler's	South Windsor	22.3	Italian, pork
Grand Union	Stratford	23.6	Italian, sweet
Grand Union	Stratford	19.4	Italian, hot
Klarides Supermarket	Seymour	17.4	Italian, sweet
McDonalds	Milford	23.0	cooked
McDonalds	Milford	34.1	patties, precooked
McDonalds	Milford	35.0	patties, precooked
Me-Ma's Too	Litchfield	43.0	
Munsons Market	Columbia	26.3	meat, breakfast
Orsini's	Old Saybrook	21.6	Italian
Papa Ginos	Wethersfield	37.0	cooked
Pat's IGA	Wolcott	17.3	Italian, hot
Pathmark	Danbury	22.3	Italian, sweet
Pathmark	Danbury	26.3	Italian, hot

Table 3. Fat content of sausage (continued).

Vendor	Town	% fat found	Label declaration
Perdue	Salisbury, MD	11.3+	turkey, sweet, Italian, nmt 10% fat
Purity Supreme	Wethersfield	17.5	
Stop & Shop	Danbury	18.0	Italian, sweet
Stop & Shop	Danbury	18.3	garlic & cheese
Stop & Shop	East Hartford	16.1	garlic & cheese
Stop & Shop	East Haven	21.1	Italian
Stop & Shop	Enfield	18.1	Italian, hot
Stop & Shop	Enfield	19.9	hot
Stop & Shop	Groton	20.1	Italian, hot
Stop & Shop	Groton	20.0	Italian, hot
Stop & Shop	New Britain	21.6	
Stop & Shop	North Haven	21.8	Italian
Stop & Shop	Simsbury	24.9	sweet
Stop & Shop	Waterford	19.4	Italian
Stop & Shop	Willimantic	20.3	meat, Italian
Swift premium	Oak Brook, IL	35.6	Brown N Serve, patties
Ted's Foods	Hebron	25.9	meat, Italian, hot, pork
Waldbaum's	Bloomfield	18.6	
Waldbaum's	East Haven	20.5	Italian
Waldbaum's	Meriden	17.9	Italian
Waldbaum's	North Haven	20.0	Italian, sweet
Wayside Market	Naugatuck	8.8	
Wayside Market	Naugatuck	16.3	
Waz's IGA	Canton	22.1	sweet

+ indicates an excess amount of fat

this sample contained an excess amount of water

nmt = not more than

Table 4. Fat content of miscellaneous types of products.

Vendor	Town	% fat found	Label declaration
A & P	Torrington	9.9+	ground turkey, 93% fat free
A & P	Torrington	8.0	ground turkey, nmt 7% fat
Beechwood Supermarket	Shelton	25.5	ground pork
Butterball	Downers Grove, IL	9.8	kielbasa, turkey, Polska, 13% fat
Dinner Bell	Defiance, OH	23.1	kielbasa, 25% less fat, lean n lo
Food Mart	Bristol	27.0	ground pork
Grote & Weigel	Hartford	24.3	frankfurters, beef
Hillshire Farms	Cincinnati, OH	26.0+	kielbasa, lite, 33% less fat
Klarides Supermarket	Derby	19.0	ground pork
Perdue	Salisbury, MD	7.6	ground turkey, 7% fat
Perdue	Salisbury, MD	10.4	ground chicken, 10% fat
Perdue	Salisbury, MD	11.1+	ground chicken, only 10% fat
Perdue	Salisbury, MD	7.9	ground turkey, nmt 7% fat
Shady Brook Farms	Dayton, VA	11.3+	ground turkey 90% fat free
Shop Rite	Bristol	17.1	ground pork

+ indicates an excess amount of fat

nmt = not more than



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