



“CANADIANIZED”

# Ground Beef Data

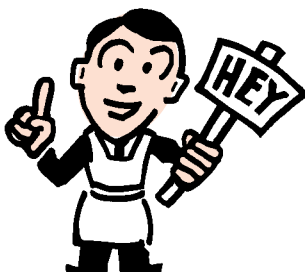


Canadians have their own new data, no longer depending on  
American information.



## “ C A N A D I A N I Z E D ” G R O U N D B E E F

**C**omplimentary copies of “Your Complete Guide to Ground Beef” may be ordered from your local Beef Information Centre. The brochure includes a section on, “Burgers: Delicious and Nutritious”, providing easily understood nutrition information for consumers. Tips for purchasing, storage, food safety, and recipe suggestions are also included.



### For More Information

Visit our web site at [www.beefinfo.org](http://www.beefinfo.org)

Call toll free **1-888-248-BEEF**

Contact your local **Beef Information Centre**

### Beef Information Centre Offices

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“ C A N A D I A N I Z E D ” G R O U N D B E E F

# For the first time ever, data are available on extra lean and “crumbles”.

**G**round beef is the most popular form of meat eaten in Canada. Thus, it is important that Canadians have accurate information regarding its nutrient content. The Beef Information Centre has worked with Health Canada to design the study protocol to update the nutrient data for ground beef.

You may wonder: 

**What are ground beef crumbles?**

Crumbles are small stir-fried pieces of ground beef used for chili, spaghetti, etc.








## Canadians Enjoy Ground Beef

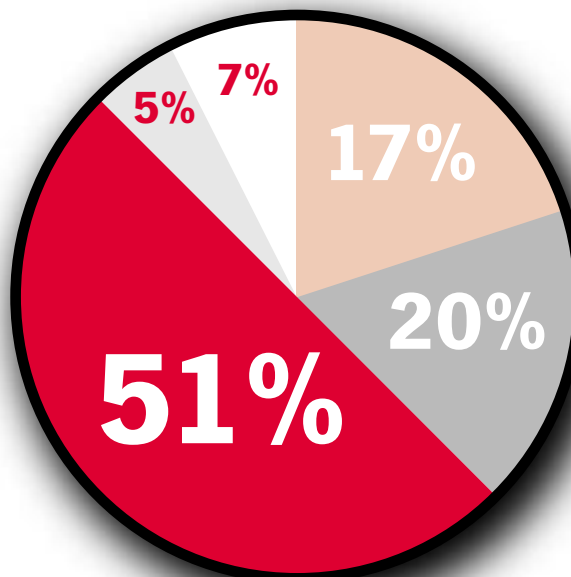
Ground beef represents 51% of all beef purchased at the grocery store. When dining out, Canadians choose burgers three out of four times that they order beef.

Figure 1.

Percentage Breakdown of Canadian Retail Beef Sales for 2000 (kg volume)

-  Roasts
-  Steaks
-  Ground Beef
-  Cold Cuts/Value Added (e.g. marinated)
-  Stew/Organ Meat/Veal/Miscellaneous

Source: Consumer Panel of Canada, The NPD Group, Inc.



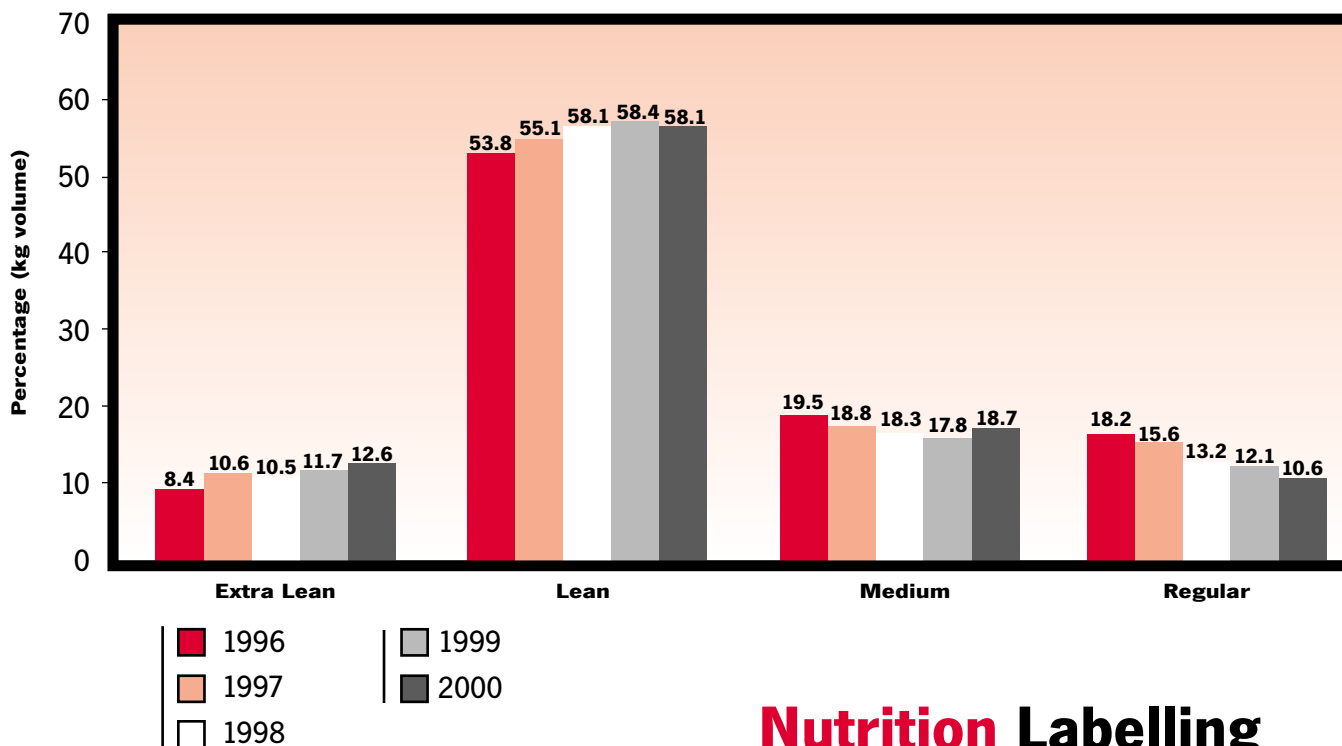


# Lean Ground - the Popular Choice

It is evident that Canadians are making the connection to lean eating when they select ground beef. The sales of extra lean and lean ground beef have been increasing over the last several years and now represent 71% of the ground beef sold in retail stores in Canada. With the increasing popularity of extra lean ground beef, it is even more important that we have Canadian nutrient data available.

Figure 2.

Percentage Breakdown for Canadian Ground Beef Retail Sales Excluding Burger/Patty Category 1996 vs 1997 vs 1998 vs 1999 vs 2000



Source: Consumer Panel of Canada, The NPD Group, Inc.

## You may wonder:

**Why are the fat values in the tables from the Canadian Nutrient File (CNF) different from those on the nutrition label?**

The CNF definition for total fat includes mono-, di- and tri-glycerides and polar lipids. The nutrition labelling definition for total fat is total lipid fatty acids expressed as triglycerides. The method used to determine the total fat content is different for each definition.



## Nutrition Labelling

Recently proposed changes to Canadian nutrition labelling regulations would require a “Nutrition Facts” box on pre-packaged foods. Foods packaged at retail would be exempted from this requirement. Foods must be labelled as sold. For meat, this is for raw product. The fat will decrease with cooking and draining, especially for regular and medium ground beef, as shown in Figure 3, Effect of Cooking Method on Fat Content.



# “CANADIANIZED” GROUND BEEF

## Save Money & Lower Fat Content

The fat content of cooked, **regular** ground beef crumbles can be decreased to **slightly less** than that of cooked, lean ground beef crumbles, simply by rinsing away the fat. The cooked yield for rinsed, regular ground beef is approximately 5% lower than lean crumbles. If regular ground beef costs at least 5% less than lean ground beef, then this is an economical, low fat option for recipes using crumbled ground beef, with minimal effects on flavour.

**Directions:** Pan-fry crumbles until well done. After draining fat, pour crumbles into a colander or strainer while holding over the sink. Using hot water, rinse the crumbles well. Shake the colander to remove excess moisture. Use the rinsed crumbles in recipes such as pasta sauce, chili or taco filling and season to taste.



### You may wonder:

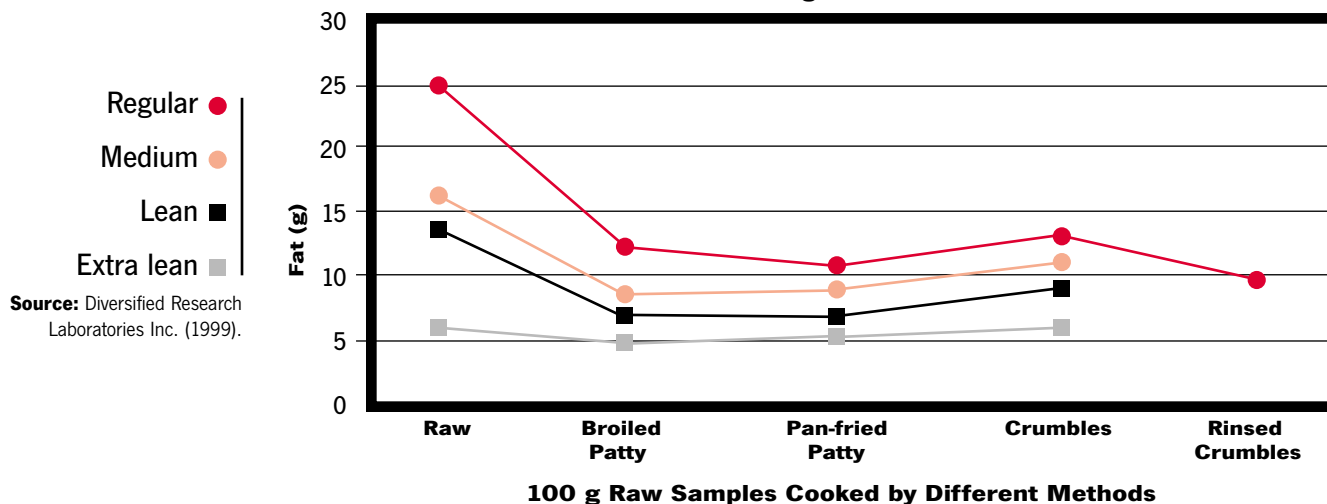
*What is the difference between beef patties and beef burgers?*

Both products are made from ground beef. Patties may have seasonings but cannot have water, binders or fillers added to the ground beef. Burgers may have all of these additional ingredients.



Figure 3.

Effect of Cooking Method on Fat Content



Note: The cooked products have varying weights based on the cooked yield from 100 g raw ground beef.

### You may wonder:

*Why is the fat value for 100 g cooked product higher than that for 100 g raw? (lean-14.4 vs 13.1 g)*

Cooking results in a decrease in the weight of the product due to the loss of moisture. A 100 g raw lean ground beef patty weighs 62.4 g after cooking. The moisture content decreases from 66.5 g to 34.4 g, but most of the nutrients do not decrease. When calculations are done to determine the values for 100 g cooked product versus 62.4 g, the values for the remaining nutrients will be higher than in 100 g raw product. Figure 3, Effect of Cooking Method on Fat Content, shows the resulting fat content when 100 g raw ground beef is cooked using different methods.



100 g raw burger (lean)  
13.1 g fat



62.4 g cooked burger  
9.0 g fat

$$\frac{x}{100} = \frac{9.0}{62.4}$$

$$x = \frac{9.0 \times 100}{62.4}$$

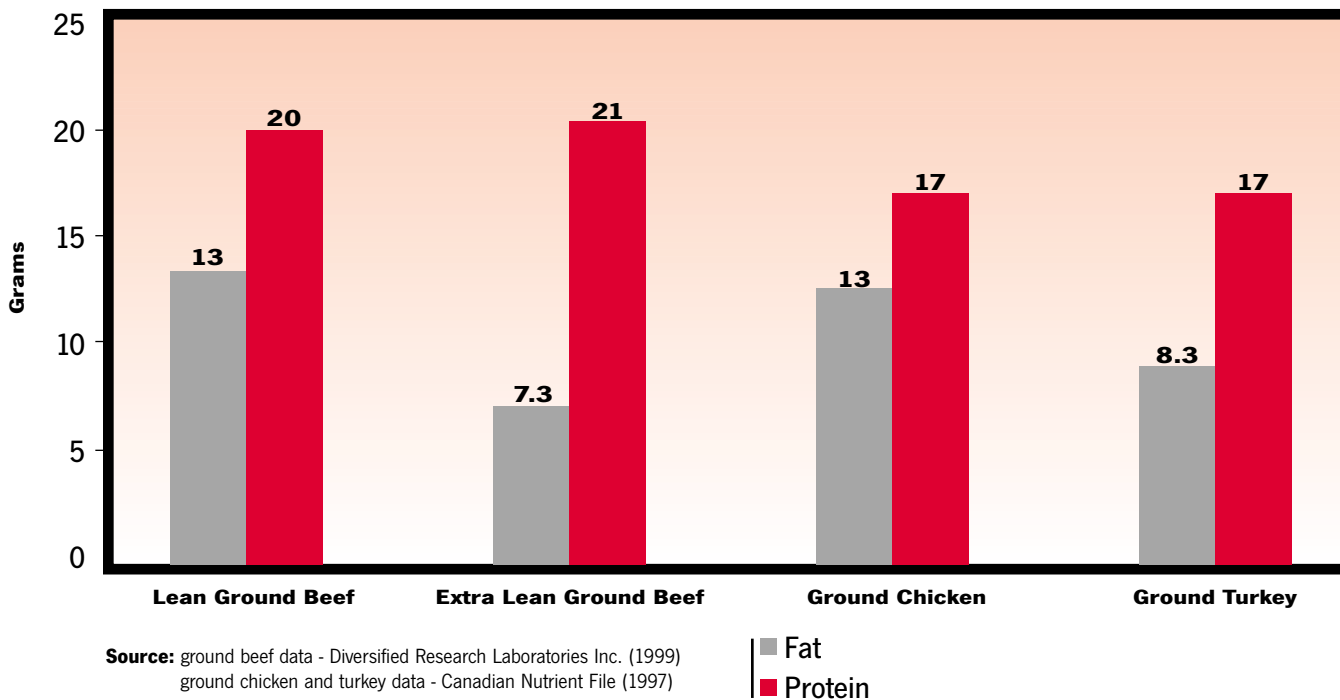
Calculation for 100 g cooked  
14.4 g fat



“ C A N A D I A N I Z E D ” G R O U N D B E E F

Figure 4.

Comparison of Fat and Protein for Lean and Extra Lean Ground Beef, Ground Chicken, and Ground Turkey (100 g raw)



You may wonder:

Why is the fat content on the nutrition label lower than maximum fat contents (see chart) for each type of ground beef?

The maximum fat contents are regulated by law and are used by government inspectors to ensure that the meat is labelled correctly. The research was based on ground beef samples purchased from retail stores across Canada and show that retailers are well within the regulated levels.

I have noticed lean ground chuck and extra lean ground sirloin in my store. What fat content would they have?

The maximum fat allowed would be the same as for other ground beef classified as “lean” or “extra lean”.



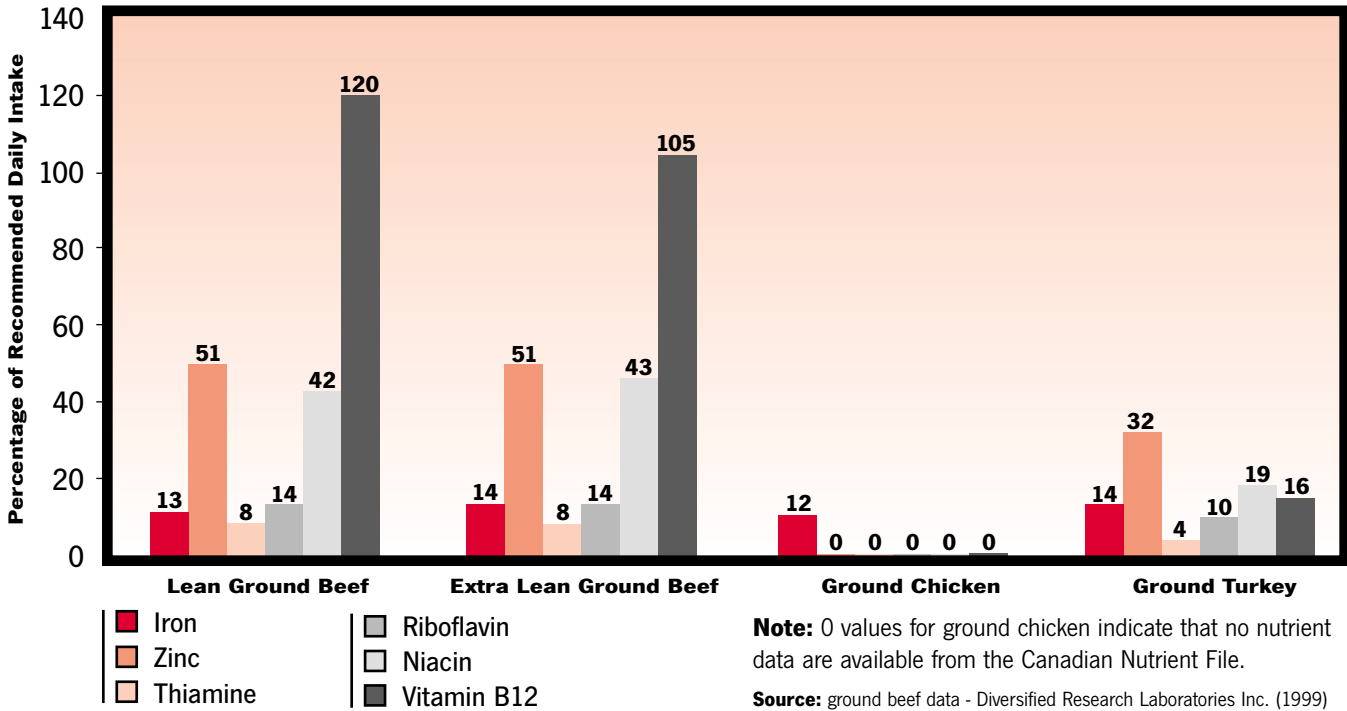
Ground Beef	Maximum Fat Content
Extra Lean	10%
Lean	17%
Medium	23%
Regular	30%



# “CANADIANIZED” GROUND BEEF

### Figure 5.

Comparison of Some of the Key Minerals and Vitamins Provided By the Meat and Alternatives Group  
Lean and Extra Lean Ground Beef, Ground Chicken and Ground Turkey  
(100 g raw)



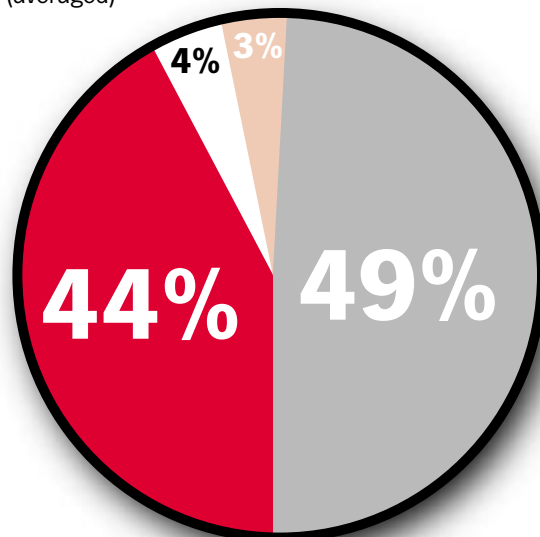
## Types of Fatty Acids

The fat in ground beef is comprised of a variety of types of fatty acids. Approximately 2/3rds of the fat in beef is either unsaturated or in the form of stearic acid, a saturated fatty acid shown to have little effect on blood cholesterol levels (1). Trans fatty acids occur naturally in ruminant animals (e.g., cattle, goats, sheep) due to the natural fermentation process in the rumen. They are different isomers than the trans fatty acids formed from hydrogenating vegetable oils and do not appear to have the same negative relationship with coronary heart disease (2, 3, 4).

- Monounsaturated
- Saturated
- Trans
- Polyunsaturated

### Figure 6.

Breakdown of the Types of Fatty Acids Found in 100 g Raw Ground Beef (averaged)





## Quick Tips for Safe Handling

Always cook ground beef thoroughly to 160°F (70°C). The meat should no longer be pink and the juices will show no pink colour. **However, colour is not a reliable indicator of doneness and the use of an instant read thermometer is recommended to ensure that the ground beef is safe to eat.** Occasionally, cooked ground beef will stay pink even though it has reached a temperature of 160°F (70°C). This may be caused by a reaction between the oven heat and myoglobin, a naturally occurring pigment in meat (5). It can also occur when ground beef is cooked in the presence of nitrates or nitrites such as those used in bacon and ham. Naturally occurring nitrates may be found in water and vegetables such as celery, cabbage, radishes, turnips, spinach, and parsley. The meat and poultry handling and storage guide, “Chill Out”, is available from the Beef Information Centre.

## Packaging

Ground beef can be packaged in the traditional tray with plastic overwrap. Or, there are two types of packaging, using a plastic film that keeps oxygen from coming in contact with the surfaces of the beef, which extend the shelf life of ground beef beyond 24 hours. Chub packs, which are tubes of ground beef with metal clips on either end, have an 18-day shelf life from the time of packaging. MAP, or modified atmosphere packaged ground beef, has an 8-10 day shelf life. There are several types of MAP packaging options. The most popular method uses a mixture of 80% oxygen and 20% carbon dioxide. Ground beef in traditional packaging will have a “packaged on” date and ground beef in chub or MAP packaging will have a “best before” date.

### REFERENCES

1. Bonanome, A. & Grundy, S.M. (1988). Effect of dietary stearic acid on plasma cholesterol and lipoprotein levels. *New England Journal of Medicine*, *118*, 1244-1248.
2. Ascherio, A., Hennekens, C.H., Buring, J.E., Master, C., Stampfer, M.J., & Willet, W.C. (1994). Trans-fatty acids intake and risk of myocardial infarction. *Circulation*, *89* (1), 94-101.
3. Pietinen, P., Ascherio, A., Korhonen, P., Hartman, A.M., Willet, W.C., Albanes, D., & Virtamo, J. (1997). Intake of fatty acids and risk of coronary heart disease in a cohort of Finnish men. *American Journal of Epidemiology*, *145* (10), 876-887.
4. Willet, W.C., Stampfer, M.J., Manson, J.E., Colditz, G.A., Speizer, F.E., Rosner, B.A., Sampson, L.A., & Hennekens, C.H. (1993). Intake of trans fatty acids and risk of coronary heart disease among women. *The Lancet*, *341*, 581-585.
5. Food Safety and Inspection Service, United States Department of Agriculture. (2000, November). The color of meat and poultry. [On-line]. Available: <http://www.fsis.usda.gov/OA/pubs/mpcolor.htm>

### You may wonder:

**The ground beef package has a best before date for 4 days from now. I thought that ground beef had to be used within 24 hours.**

The newer types of fresh meat packaging mentioned under the packaging section allow for longer storage times in the refrigerator and are labelled with a “best before” date. Once these packages are opened, the ground beef must be used within 24 hours or frozen for up to 2-3 months.



## Data Tables

The following pages contain data from the Nutritional Composition of Ground Beef study conducted by Diversified Research Laboratories for the Beef Information Centre. We have used the nutrition labelling definition of fat and the corresponding calorie calculation because these are the most current definitions used by Health Canada and the Canadian Food Inspection Agency for nutrition labelling purposes.

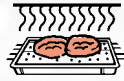




“ CANADIANIZED ” GROUND BEEF

# Regular Ground Beef

Maximum fat content 30%

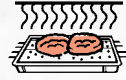


Tests	Raw			Pan-fried Patties		*Broiled Patties		Crumbles - No Rinse		Crumbles - Rinsed	
		/100 g	/100 g	/55.73 g	/100 g	/60.26 g	/100 g	/58.71 g	/100 g	/62.30 g	
% Yield				55.73		60.26		58.71		62.30	
Moisture	g	58.1	51.1	28.5	51.5	31.0	48.5	28.5	58.3	36.3	
Ash	g	(0.8)	(1.2)	0.6	1.1	0.7	1.4	0.8	1.1	0.7	
Protein	g	16.6	29.0	16.2	25.4	15.3	28.7	16.8	26.4	16.5	
Fat (a)	g	24.7	19.2	10.7	21.7	13.1	22.3	13.1	15.1	9.4	
Fat (b)	g	24.1	19.2	10.7	20.7	12.5	22.1	13.0	15.1	9.4	
Carbohydrate	g	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Calories		288	297	165	301	181	322	189	249	155	
Saturates	g	10.17	7.99	4.45	8.87	5.35	9.30	5.46	6.30	3.92	
Trans fatty acids	g	0.61	0.49	0.27	0.73	0.44	0.55	0.32	0.40	0.25	
Cis monounsaturates	g	11.58	<b>9.20</b>	5.12	9.96	6.00	10.59	6.21	7.23	4.5	
Cis polyunsaturates	g	(0.50)	(0.50)	0.28	0.57	0.34	0.54	0.32	0.39	0.24	
Cholesterol	mg	66.2	82.5	46.0	83.9	50.6	83.9	49.2	73.5	45.8	
Iron	mg	1.8	2.8	1.6	2.7	1.6	2.9	1.7	2.9	1.8	
Zinc	mg	<b>4.2</b>	<b>6.7</b>	3.7	6.1	3.7	6.1	3.6	5.6	3.5	
Magnesium	mg	16.8	<b>25.0</b>	13.9	21.8	13.1	27.7	16.3	21.1	13.1	
Copper	mg	<b>0.1</b>	<b>0.15</b>	0.08	0.1	0.06	0.14	0.08	0.10	0.06	
Calcium	mg	<b>11.1</b>	<b>17.8</b>	9.9	13.9	8.3	19.0	11.2	16.0	10.0	
Manganese	mg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Phosphorus	mg	137	<b>211</b>	117	187	112	237	139	178	111	
Sodium	mg	(60.2)	86.5	48.2	85.1	51.3	104	60.9	71.9	44.8	
Potassium	mg	231	338	188	285	172	402	236	284	177	
Vitamin B12	mcg	(2.4)	3.0	1.7	1.9	1.1	3.6	2.1	3.3	2.0	
Niacin	mg	4.4	6.1	3.4	5.9	3.5	6.4	3.7	5.0	3.1	
Niacin	NE	8.0	12.3	6.9	11.8	7.1	12.6	7.4	10.7	6.7	
Vitamin B6	mg	0.21	0.28	0.15	0.21	0.12	0.33	0.19	0.27	0.17	
Thiamine	mg	0.10	<b>0.11</b>	0.06	0.10	0.06	0.14	0.08	0.11	0.07	
Riboflavin	mg	<b>0.19</b>	<b>0.28</b>	0.16	0.27	0.16	0.29	0.17	0.24	0.15	
Pantothenic Acid	mg	<b>0.56</b>	<b>0.70</b>	0.39	0.98	0.59	0.78	0.46	0.65	0.40	

**Note:**  
 Numbers in **brackets** represent data that are at least 10% lower and numbers in **bold** are at least 10% higher than the data listed in the 1997 Canadian Nutrient File.  
 (a) Canadian Nutrient File - total fat includes mono-, di- and tri-glycerides  
 (b) Nutrition labelling - total fat is total lipid fatty acids expressed as triglycerides  
 \*extrapolated based on retention values for moisture, ash, protein, fat, carbohydrate, calories, and fatty acids

# Medium Ground Beef

Maximum fat content 23%



Tests	Raw		Pan-fried Patties		*Broiled Patties		Crumbles	
		/100 g	/100 g	/61.08 g	/100 g	/62.53 g	/100 g	/65.11 g
% Yield				61.08		62.53		65.11
Moisture	g	64.3	53.1	32.4	56.4	35.3	52.5	34.2
Ash	g	(0.8)	1.2	0.7	1.1	0.7	1.3	0.9
Protein	g	18.9	29.8	18.2	28.2	17.6	29.2	19.0
Fat (a)	g	(16.1)	16.7	10.2	15.1	9.4	17.8	11.6
Fat (b)	g	15.7	16.3	10.0	14.9	9.3	17.6	11.4
Carbohydrate	g	<1	<1	<1	<1	<1	<1	<1
Calories		(222)	275	168	247	154	283	184
Saturates	g	(6.67)	6.88	4.20	6.29	3.93	7.42	4.83
Trans fatty acids	g	0.66	0.67	0.41	0.54	0.34	0.74	0.48
Cis monounsaturates	g	(7.12)	7.43	4.54	6.90	4.31	7.99	5.20
Cis polyunsaturates	g	(0.43)	(0.50)	0.31	0.38	0.24	0.53	0.34
Cholesterol	mg	59.6	<b>87.8</b>	53.6	85.2	53.3	81.9	53.3
Iron	mg	1.9	(2.7)	1.6	2.4	1.5	2.6	1.7
Zinc	mg	4.0	<b>6.6</b>	4.0	6.2	3.8	6.3	4.1
Magnesium	mg	18.7	25.0	15.3	21.4	13.4	27.6	18.0
Copper	mg	<b>0.09</b>	<b>0.13</b>	0.08	0.1	0.06	0.14	0.10
Calcium	mg	<b>10.1</b>	<b>14.9</b>	9.1	13.3	8.3	14.8	9.7
Manganese	mg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phosphorus	mg	<b>156</b>	<b>213</b>	130	180	112	230	150
Sodium	mg	(59.0)	(75.7)	46.2	74.5	46.6	90.4	58.8
Potassium	mg	267	352	215	284	178	404	263
Vitamin B12	mcg	(1.8)	2.4	1.4	1.8	1.1	2.5	1.6
Niacin	mg	4.9	<b>7.1</b>	4.4	6.1	3.8	7.4	4.8
Niacin	NE	<b>9.1</b>	<b>13.6</b>	8.3	12.0	7.5	13.7	8.9
Vitamin B6	mg	(0.22)	0.25	0.15	0.21	0.13	0.32	0.21
Thiamine	mg	<b>0.12</b>	<b>0.11</b>	0.07	0.11	0.07	0.15	0.10
Riboflavin	mg	0.20	<b>0.30</b>	0.18	0.27	0.17	0.31	0.20
Pantothenic Acid	mg	<b>0.61</b>	<b>0.68</b>	0.42	0.98	0.61	0.82	0.53
Folacin	mcg	6.5	7.4	4.5			8.4	5.4

**Note:**

Numbers in **brackets** represent data that are at least 10% lower and numbers in **bold** are at least 10% higher than the data listed in the 1997 Canadian Nutrient File.

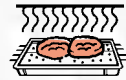
(a) Canadian Nutrient File - total fat includes mono-, di- and tri-glycerides

(b) Nutrition labelling - total fat is total lipid fatty acids expressed as triglycerides

\*extrapolated based on retention values for moisture, ash, protein, fat, carbohydrate, calories, and fatty acids

# Lean Ground Beef

Maximum fat content 17%



Tests	Raw		Pan-fried Patties		*Broiled Patties		Crumbles	
	/100 g		/100 g	/62.40 g	/100 g	/65.12 g	/100 g	/66.54 g
% Yield			62.40		65.12		66.54	
Moisture	g	66.5	55.1	34.4	56.9	37.1	55.5	36.9
Ash	g	0.9	1.3	0.8	1.1	0.7	1.4	0.9
Protein	g	19.6	29.7	18.5	28.0	18.2	29.0	19.3
Fat (a)	g	13.7	14.7	9.2	14.7	9.5	14.9	9.9
Fat (b)	g	13.1	14.4	9.0	13.2	8.6	14.3	9.5
Carbohydrate	g	<1	<1	<1	<1	<1	<1	<1
Calories		201	256	160	234	152	253	168
Saturates	g	5.46	5.99	3.74	5.83	3.80	5.97	3.97
Trans fatty acids	g	0.46	0.46	0.29	0.51	0.33	0.48	0.32
Cis monounsaturates	g	6.12	<b>6.79</b>	4.24	6.75	4.40	6.74	4.48
Cis polyunsaturates	g	(0.36)	(0.46)	0.28	0.38	0.25	0.43	0.28
Cholesterol	mg	59.8	<b>84.5</b>	52.7	84.8	55.2	79.1	52.6
Iron	mg	(1.8)	2.9	1.8	2.6	1.7	2.8	1.9
Zinc	mg	<b>4.6</b>	<b>7.2</b>	4.5	6.9	4.5	6.7	4.5
Magnesium	mg	19.4	26.4	16.5	21.7	14.1	28.5	18.9
Copper	mg	<b>0.08</b>	0.11	0.07	0.10	0.07	0.13	0.10
Calcium	mg	<b>10.2</b>	<b>15.3</b>	9.5	13.7	8.9	14.2	9.4
Manganese	mg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phosphorus	mg	<b>161</b>	<b>225</b>	141	183	119	232	154
Sodium	mg	63.5	84.2	52.5	73.4	47.8	93.4	62.1
Potassium	mg	271	365	228	294	191	390	260
Vitamin B12	mcg	<b>2.4</b>	<b>3.2</b>	2.0	2.0	1.3	2.9	1.9
Niacin	mg	<b>5.4</b>	<b>6.7</b>	4.2	6.0	3.9	7.0	4.7
Niacin	NE	<b>9.6</b>	<b>13.1</b>	8.2	12.0	7.8	13.3	8.9
Vitamin B6	mg	0.24	(0.25)	0.15	0.19	0.12	0.35	0.23
Thiamine	mg	<b>0.11</b>	<b>0.12</b>	0.07	0.10	0.07	0.16	0.10
Riboflavin	mg	0.23	<b>0.34</b>	0.21	0.28	0.18	0.34	0.23
Pantothenic Acid	mg	<b>0.70</b>	(0.80)	0.50	1.00	0.65	0.84	0.56

**Note:**

Numbers in **brackets** represent data that are at least 10% lower and numbers in **bold** are at least 10% higher than the data listed in the 1997 Canadian Nutrient File.

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(b) Nutrition labelling - total fat is total lipid fatty acids expressed as triglycerides

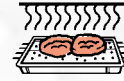
\*extrapolated based on retention values for moisture, ash, protein, fat, carbohydrate, calories, and fatty acids



“ CANADIANIZED ” GROUND BEEF

# Extra Lean Ground Beef

Maximum fat content 10%



Tests	Raw		Pan-fried Patties		*Broiled Patties		Crumbles	
	/100 g		/100 g	/67.23 g	/100 g	/67.17 g	/100 g	/68.20 g
% Yield			67.23		67.17		68.20	
Moisture	g	71.1	59.4	39.9	60.2	40.4	58.8	40.1
Ash	g	1.0	1.2	0.8	1.2	0.8	1.4	1.0
Protein	g	20.9	30.3	20.3	30.1	20.2	30.7	20.9
Fat (a)	g	7.6	10.1	6.8	8.7	5.8	10.1	6.9
Fat (b)	g	7.3	9.6	6.5	8.7	5.8	9.8	6.6
Carbohydrate	g	<1	<1	<1	<1	<1	<1	<1
Calories		155	216	145	203	136	219	149
Saturates	g	3.13	4.11	2.76			4.21	2.87
Trans fatty acids	g	0.26	0.34	0.23			0.34	0.23
Cis monounsaturates	g	3.27	4.33	2.91			4.41	3.01
Cis polyunsaturates	g	0.27	0.36	0.24			0.34	0.23
Cholesterol	mg	55.1	80.7	54.3			78.4	53.4
Iron	mg	2.0	2.7	1.8			2.9	1.9
Zinc	mg	4.6	7.0	4.7			6.9	4.7
Magnesium	mg	20.9	26.2	17.6			29.5	20.1
Copper	mg	0.11	0.15	0.10			0.14	0.10
Calcium	mg	6.3	8.4	5.6			9.2	6.3
Manganese	mg	<0.1	<0.1	<0.1			<0.1	<0.1
Phosphorus	mg	172	220	148			240	164
Sodium	mg	64.0	74.4	50.0			87.1	59.4
Potassium	mg	292	349	234			415	283
Vitamin B12	mcg	2.1	2.9	1.9			2.8	1.9
Niacin	mg	5.4	6.7	4.5			7.6	5.2
Niacin	NE	9.9	13.2	8.9			14.2	9.7
Vitamin B6	mg	0.27	0.26	0.18			0.31	0.21
Thiamine	mg	0.10	0.11	0.07			0.14	0.10
Riboflavin	mg	0.22	0.32	0.21			0.32	0.22
Pantothenic Acid	mg	0.88	0.69	0.47			0.82	0.56
Folacin	mcg	4.5	7.3	4.9			7.2	4.9

Note:

(a) Canadian Nutrient File - total fat includes mono-, di- and tri-glycerides

(b) Nutrition labelling - total fat is total lipid fatty acids expressed as triglycerides

\*extrapolated based on retention values, data are not available for fatty acids, vitamins or minerals

