

Understanding Beef: Health & Nutrition

As Canadians, we are fortunate to have a variety of nourishing foods to choose from, each making a unique contribution to our health and wellbeing.

As one of many protein options, just how does beef stack up nutritionally? Beef is a single ingredient naturally nutrient-dense protein food that provides a variety of essential nutrients many Canadians fall short of in their diets.

A relatively small serving of beef can go a long way towards helping Canadians to meet their nutrient needs for good health.

There are many reasons beef belongs at your table. This educational resource features facts and research about how beef fits in healthy eating patterns.

THE BIG PICTURE

When it comes to healthy eating, it is the quality of our food choices that counts over time. *Canada's Food Guide* encourages Canadians to 'eat plenty of vegetables and fruits, whole grain foods and protein foods'.¹ According to Health Canada, these 'nutritious foods are the foundation for healthy eating'. In other words, healthy eating means choosing nutritious whole foods most of the time, while discretionary (treat) foods should be occasional.

The food guide plate approach shown below is a simple way to achieve flavour, satisfaction and nutrition in a meal. Using this visual approach, building balanced, healthy meals is as easy as 1, 2, 3:

1. Vegetables and/or fruit on $\frac{1}{2}$ of the plate
2. Whole grain foods on $\frac{1}{4}$ of the plate
3. Protein foods on $\frac{1}{4}$ of the plate



KNOW YOUR BEEF



QUICK FACTS KEY

A 100 g serving of cooked beef delivers:

- 35 g of protein and 250 calories²
- 7 nutrients many Canadians need more of, such as iron, zinc, and vitamin B₁₂.^{2,3}

On average Canadians eat 41 g of unprocessed red meat per day (288 g per week)⁴

In Canada unprocessed red meat accounts for:⁴

- 5% of calories
- 7% of total fat
- 9% of saturated fat

46% of calories in the diet of Canadians come from ultra-processed foods⁵

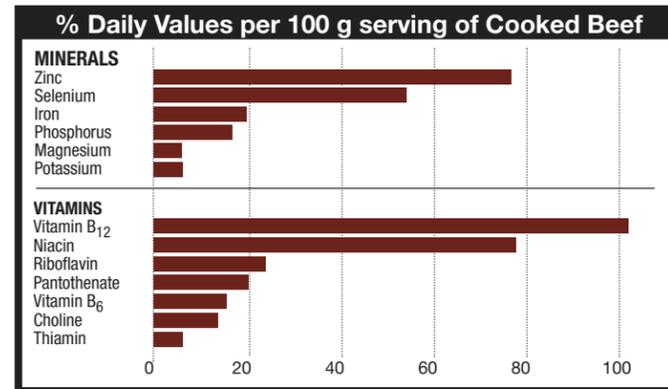
55% of the fat in beef is unsaturated.²

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BEEF IS A NUTRITIOUS PROTEIN CHOICE

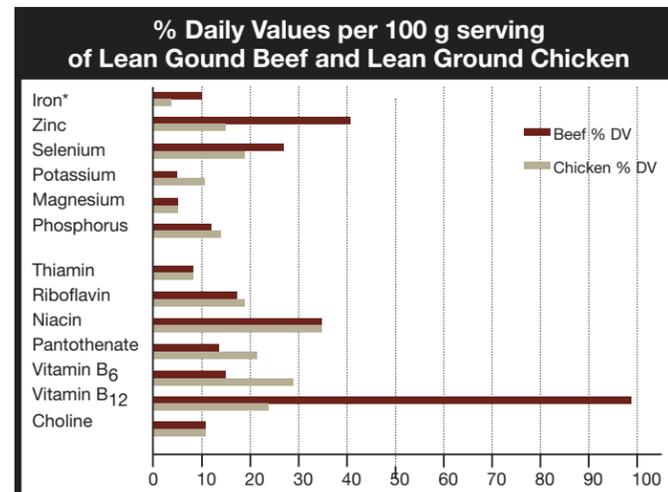
Canada's Food Guide recommends lean cuts of beef and other red meats as part of the recommended pattern of eating.¹ Red meats such as beef are single ingredient whole foods that make valuable contributions to healthy eating patterns.

Whole, unprocessed foods, including beef, each offer a unique nutrient package. Beef is an excellent source of protein, contains a variety of minerals, including easily absorbed heme iron and zinc, and an impressive range of B vitamins.² A modest serving of cooked beef goes a long way, delivering many of the key nutrients needed for good health.²



Sources: Health Canada. Canadian Nutrient File, 2015. Food Code Beef 6172 (composite cuts, steak/roast, lean and fat, cooked). Choline value from U.S. Department of Agriculture, Agricultural Research Service. FoodData Central, 2019. fdc.nal.usda.gov. Food Code 13361.

Each food is unique - which is why variety matters. For example, here is how ground beef compares to ground chicken:



Sources: Health Canada. Canadian Nutrient File, 2015. Food Codes Beef 2683 (ground, lean, raw) and Chicken 918 (ground, lean, raw).

*Note: A 100 g serving of raw lean ground chicken does not qualify for the claim 'Source of Iron' as it provides only 4% of the Daily Value (DV) for iron. As per Canadian nutrition labelling regulations, a nutrient content claim can only be made for a vitamin or mineral if a food provides at least 5% of the DV per serving of stated size.

HOW BEEF ADDRESSES NUTRIENT SHORTFALLS

According to an analysis of the Canadian Community Health Survey (CCHS) - Nutrition data, a significant number of Canadian adults are at risk of inadequate nutrient intakes.³ Beef contains 7 of the nutrients that many Canadians need more of in their diets – iron, zinc, magnesium, potassium, and the B vitamins, B₁₂, B₆ and thiamin.^{2,3}

The Canadian Community Health Survey (CCHS) – Nutrition is a national survey of Canadians' food and beverage intakes. The most recent CCHS – Nutrition survey was conducted by Health Canada in partnership with Statistics Canada in 2015.⁴ Health Canada uses this data in developing Canada's Food Guide and for other nutrition policy and planning purposes.

| Nutrient | Finding | Relevance |
|-------------------------|--|--|
| Iron | Nearly 30% of women 19 to 50 years do not get enough iron from their diet. ³ | Iron needs are greatest during periods of growth (e.g., infancy and adolescence) and for women during their childbearing years. ⁶ |
| Zinc | At least 30% of women and 20% of men have inadequate intakes from their diet. ³ | Inadequate zinc intake can affect growth, pregnancy outcomes and immune function. ⁶ |
| Vitamin B ₁₂ | As many as 21% of women have inadequate intakes from their diets. ³ | Vitamin B ₁₂ aids in red blood cell formation and is a factor in energy metabolism. |

Beef makes a valuable contribution to help meet nutrient needs throughout life.



| Nutrient | Amount in Beef | % Daily Value | Claim |
|-------------------------|----------------|---------------|------------------|
| Vitamin B ₁₂ | 2.45 µg | 102% | Excellent Source |
| Zinc | 8.5 mg | 77% | Excellent Source |
| Selenium | 29 µg | 53% | Excellent Source |
| Niacin | 12.5 mg | 78% | Excellent Source |
| Riboflavin | 0.3 mg | 23% | Good Source |
| Pantothenate | 1 mg | 20% | Good Source |
| Iron | 3.5 mg | 19% | Good Source |
| Phosphorus | 200 mg | 16% | Good Source |
| Vitamin B ₆ | 0.25 mg | 15% | Good Source |
| Choline | 70 mg | 13% | Source |
| Thiamin | 0.075 mg | 6% | Source |
| Magnesium | 25 mg | 6% | Source |
| Potassium | 300 mg | 6% | Source |

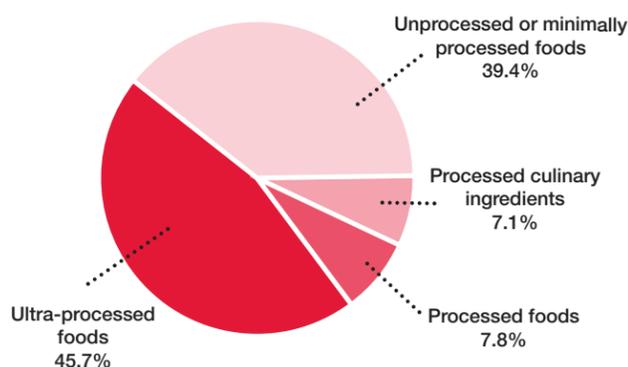
Sources: Health Canada. Canadian Nutrient File, 2015. Food Code Beef 6172 (composite cuts, steak/roast, lean and fat, cooked). Choline value from U.S. Department of Agriculture, Agricultural Research Service. FoodData Central, 2019. fdc.nal.usda.gov. Food Code 13361.

GOOD NUTRITION MATTERS

Many Canadians are overfed and undernourished. The prevalence of obesity in adults has increased dramatically - three-fold since 1985.⁷ Ultra-processed foods and drinks now dominate the food supply in Canada.⁵ These highly processed foods are characterized by low nutritional quality and the presence of additives. A growing body of evidence links the consumption of ultra-processed foods with poor diet quality, weight gain and greater risk of chronic diseases.^{5,8}

Canada's Food Guide encourages Canadians to focus on eating nutritious unprocessed foods as the foundation for healthy eating.¹ However, in reality ultra-processed foods and drinks often displace more nutrient-dense whole foods in Canadians' diets.⁵ Ultra-processed foods and beverages now account for nearly half of Canadians' daily energy intake (i.e., calories) based on an analysis of the most recent CCHS-Nutrition data (2015).⁵

Sources of energy (calories) in the Canadian diet



Source: Polsky JY et al. 2020. Consumption of ultra-processed foods in Canada. Statistics Canada Health Reports.

IRON – BEEF'S "VIN" (VERY IMPORTANT NUTRIENT)

Iron deficiency is the most common nutrient deficiency in the world.^{9,10} According to the World Health Organization, it is the only nutrient deficiency that remains prevalent in industrialized countries today.⁹ In Canada, the government considers iron a nutrient of concern, and for this reason iron is one of three nutrients that must be listed on every Nutrition Facts table (in addition to potassium and calcium).^{11,12}

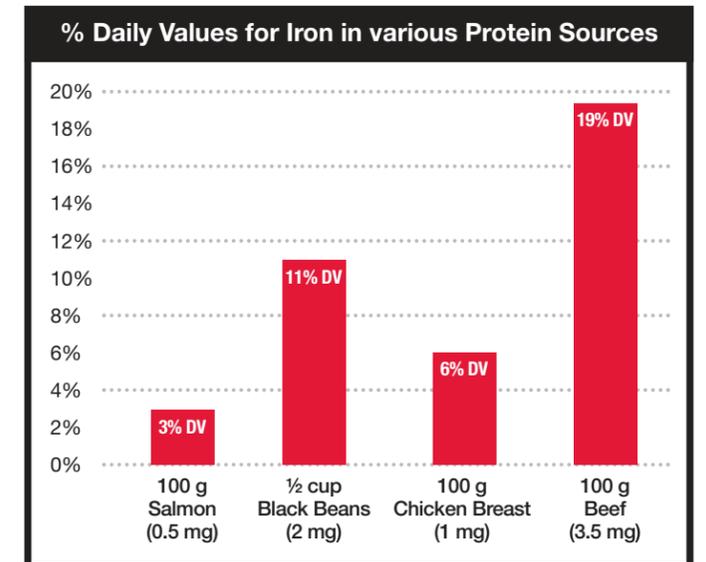
Iron is needed to carry oxygen throughout the body and for the proper functioning of muscles and nerves.¹³ Iron is also critical for proper growth and development during childhood and adolescence. Iron deficiency in infancy and childhood can have serious and irreversible effects on brain development and function.^{10,14,15}

In addition to research that found nearly 30% of Canadian women 19 to 50 years of age do not get enough iron from their diet,³ other research looking at women in Ontario found that iron deficiency affects more than one-half of pregnancies,¹⁶ a public health concern of great significance to mothers and infants.

Health Canada recognizes the critical importance of offering iron-rich foods such as meat to babies as their first solid foods starting at 6 months,¹⁴ and through the toddler years.¹⁵ In fact, babies 7 to 12 months need almost 40% more iron than a full-grown man.⁶

Meat contains a more absorbable form of iron than plant foods. The bioavailability of the heme iron found in meat is substantially higher than the non-heme iron found in cereals, legumes and tofu.¹⁵ Without meat in their diets, vegetarians need almost 2 times more iron in their diets than meat eaters.⁶

Compare the iron content of these four protein choices:



Sources: Health Canada. Canadian Nutrient File, 2015. Food Codes Salmon 3053 (sockeye (red), baked or broiled), Black Beans 3377 (boiled), Chicken Breast 842 (broiler, meat, roasted), Beef 6172 (composite cuts, steak/roast, lean and fat, cooked).

HOW MUCH RED MEAT DO WE EAT?

Canadians generally eat a moderate amount of red meat (which includes beef) according to the latest national CCHS-Nutrition survey data.⁴ On average, Canadians eat a total of 288 grams of cooked unprocessed red meat per week.⁴ That's less than three 100 gram servings, or roughly enough to account for 3 meals – 2 dinners and a lunch for example.

Fresh red meat intakes in Canada are in line with guidance from the World Cancer Research Fund (WCRF), which recommends keeping consumption of red meat to a weekly maximum of approximately 350–500g cooked weight (500 grams of cooked meat is equivalent to about 700 to 750 grams of raw meat).¹⁷ While WCRF recommends consuming very little, if any, processed meat, the recommendation is not to avoid eating meat altogether as the organization recognizes it as a “valuable source of nutrients, including protein, iron, zinc and vitamin B₁₂.”

On average, fresh red meat contributes only 5% of Canadians' total calorie intake.⁴

| Average Red Meat Intake in Canada | |
|-----------------------------------|------|
| Unprocessed red meat* (g/day) | 41.1 |
| Processed red meat** (g/day) | 19.9 |
| TOTAL g/day | 61.0 |
| TOTAL g/week | 427 |

Sources: Statistics Canada. 2018. Customized analysis of 2015 Canadian Community Health Survey - Nutrition data. (Mean red meat intakes for population aged 1 and older, excluding territories.)

*Includes beef, veal, pork and lamb including ground meat and burgers.

**Includes salted beef, bacon (but not turkey or chicken bacon), ham, sausages (not turkey or meatless), and luncheon meats (not considered poultry).



Research suggests people who eat more red meat, also tend to eat more vegetables, and have a lower BMI and waist circumference than those who eat less red meat.¹⁸

BEEF IN HEALTH RESEARCH

The relationship between meat and health has been extensively studied for decades. Major studies indicate moderate unprocessed red meat intakes can be enjoyed as part of healthy eating patterns.^{19, 20}

In a paper published in 2021, researchers evaluated meat consumption and health outcomes in 134,297 adults from 21 countries, followed over 9.5 years.¹⁹ They found no association between unprocessed red meat intakes (≥250 grams cooked/week) and mortality or major cardiovascular disease (such as heart attack or stroke). On the other hand, higher processed meat intakes (≥150 g/week) were associated with higher risk.

A comprehensive series of 5 high-quality systematic reviews also found little to no health benefits for reducing red meat.²⁰ The expert panel that conducted these reviews concluded that most people can continue to consume red meat at current average intakes (i.e., about 3 to 4 times per week).

For more summaries of recent research related to beef and health visit our Just the Facts sheets at Thinkbeef.ca/nutrition.

PROTEIN POWER

Protein is vital at every age and stage. Protein is needed to support children's healthy growth,²¹ as well as optimal bone and muscle mass and strength as we age.²²⁻²⁴ Plus, research shows higher protein diets improve satiety, which means they help keep you feeling fuller for longer.²²

The protein in beef and other meats is complete, meaning beef and other meats contain all of the essential amino acids in amounts that closely match human requirements. In contrast, most plant foods do not. This makes meat more “efficient” at delivering the protein your body requires.

Contrary to popular perception, Canadians do not eat too much protein. On average, Canadian adults get only about 17% of their total daily calories from protein according to the most recent national survey.²⁵ That is at the lower end of the recommended 10-35% of calories from protein for adults.²⁶

Each protein food in *Canada's Food Guide* has its benefits. A 100 gram serving of cooked beef delivers 35 grams of protein and only 250 calories.² While plant proteins are also part of healthy eating patterns, with their own distinct benefits, it's important to recognize they have a higher ‘caloric cost’ to deliver protein compared to animal foods.²¹ That means it takes more servings and calories of a plant food to provide the amount of protein in one modest serving of meat.

Here is how beef stacks up compared to common plant choices in terms of protein and calories:

Here's what 35 g of protein looks like

| | AMOUNT | CALORIES |
|-----------------------------|--|----------|
| Beef (cooked) | 100 grams = 1 serving* (the size of your palm) | 250 |
| Almonds | over 1 cup (3.3 servings); 1/3 cup (50 grams) = 1 serving* | 960 |
| Peanut butter | over 9 tbsp (9.4 servings); 1 tbsp = 1 serving* | 860 |
| Hummus | 1 1/2 cups (14.2 servings); 2 tbsp = 1 serving* | 740 |
| Black beans (cooked/canned) | over 2 cups (4.3 servings); 1/2 cup = 1 serving* | 520 |

Sources: Health Canada. Canadian Nutrient File, 2015. Food Codes Beef 6172, Almonds 2534, Peanut Butter 6289, Hummus 4870, Black Beans 3377.

*Serving sizes based on the Table of Reference Amounts for Food and nutrient values rounded according to Canadian nutrition labelling regulations.

WHAT ABOUT PROTEIN SUPPLEMENTS?

Protein supplements are manufactured from isolated components of whole foods. These are highly processed, refined products. Stated simply, they lack the naturally occurring benefits that come standard with whole foods. Eating real, whole, protein-dense foods such as meat, fish, or poultry, provides complete protein, plus all the vitamins and minerals naturally found in them. It's a nutritional ‘buy-one-get-many free’ scenario of sorts. And all this with a single ingredient label: nothing added.

WHAT ABOUT BEEF & FAT?

We sometimes forget that fat is an essential nutrient. Fats are required to make hormones in our bodies, and to absorb the fat-soluble vitamins A, D, E and K.

Guidelines recommend that Canadian adults consume between 20 to 35% of total calories from fat.²⁶ Adults' average fat intakes are within this range in Canada.²⁵ On average, fresh red meat accounts for only about 7% of the total calories from fat in the Canadian diet.⁴

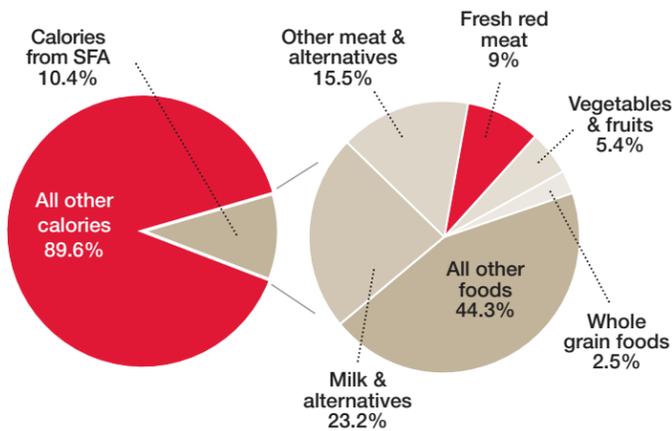
The World Health Organization recommends that saturated fat intake not exceed 10% of total energy intake.²⁷ Based on 2015 Canadian Community Health Survey - Nutrition data, saturated fat accounts for approximately 10% of Canadians' total energy intake.²⁸ And this has remained stable for the last 20 years.²⁸

The Heart and Stroke Foundation's position statement on saturated fat, heart disease and stroke encourages Canadians to pay attention to the overall quality of our diets, rather than focusing on saturated fat.²⁹ This means eating a healthy balanced diet that includes a variety of vegetables and fruits, whole grains, and proteins from various sources, while limiting highly processed food products.



Facts about saturated fat (SFA) in the diet of Canadian adults:

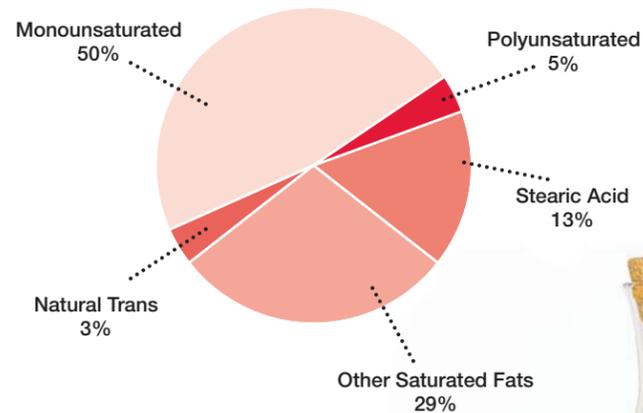
- Almost half (44.3%) of calories from saturated fat are from foods not included in the food guide.²⁸
- Only 9% of calories from saturated fat are from unprocessed (i.e., fresh) red meat⁴ (in other words, 91% of calories from saturated fat are not from fresh red meat).



Sources: Statistics Canada. 2018. Customized analysis of 2015 Canadian Community Health Survey - Nutrition data.
Harrison S et al. Consumption and sources of saturated fatty acids according to the 2019 Canada Food Guide: Data from the 2015 Canadian Community Health Survey. *Nutrients* 2019;11(9):1964.

- Once trimmed, most cuts of beef qualify as lean.^{2,30} It's good to know that with beef much of the fat can be seen and trimmed off prior to eating.
- More than half of the fat in beef is unsaturated.² Most of the unsaturated fat in beef is oleic acid, the same type of healthy fat found in olive oil and avocados.²

Fatty Acid Profile Of Beef



Sources: Health Canada. Canadian Nutrient File, 2015. Food Code Beef 6172.



WHAT ABOUT 'PLANT-BASED' DIETS?

Most Canadians don't eat enough vegetables and fruit.³¹ Whole plant foods such as these contribute fibre and many nutrients to healthy eating patterns and most people would be well served to increase their intake. However, it's important to keep in mind that 'plant-based' does not necessarily equate to healthy.³² Health Canada found many new 'plant-based' products introduced to Canadian grocery stores were high in salt, sugar and/or saturated fat and therefore not in line with the food guide recommendations.³³

It's also important to realize that 'plant-based diets' do not have to exclude meat. In fact, since animal- and plant-based foods have different nutritional profiles, they actually play complementary roles. For example, nutrients like iron, zinc and vitamin B₁₂ can be difficult to get enough of from plant foods. Canadian research shows a healthy balance of plant- and animal-based protein foods leads to better diet quality - with more favorable nutritional profiles than diets that are high in one or the other.³⁴

Thanks to what is known as the 'meat factor', meat enhances the absorption of non-heme iron from plant foods.¹⁵ This synergistic relationship is one of the reasons that consuming whole foods such as meat and vegetables or legumes in combination can be more beneficial than eating them separately. The benefits are compounded.

BEEF BELONGS

Beef is among the nutritious foods that are the foundation for healthy eating according to *Canada's Food Guide*. Beef is a source of multiple essential nutrients that many Canadians fall short of in their diets, including iron, zinc and vitamin B₁₂.

As a cornerstone to balanced meals, beef is often served with other nutritious foods such as vegetables and grains to round out the plate. These naturally nutrient-dense foods are precisely the types of whole foods people need to eat for health and wellness. As an efficient, concentrated and nutritious protein source, beef belongs in the diet of Canadians.

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Canada Beef strives to present the facts around nutrition, culinary and farming practices based on the most current scientific research. As research on these topics is ever changing, we monitor and update these topics as necessary. Recognizing that a healthy discussion is the best way for us all to gain knowledge and understanding, we welcome your comments and conversation.