Red Meat Nutrition Brief 2019

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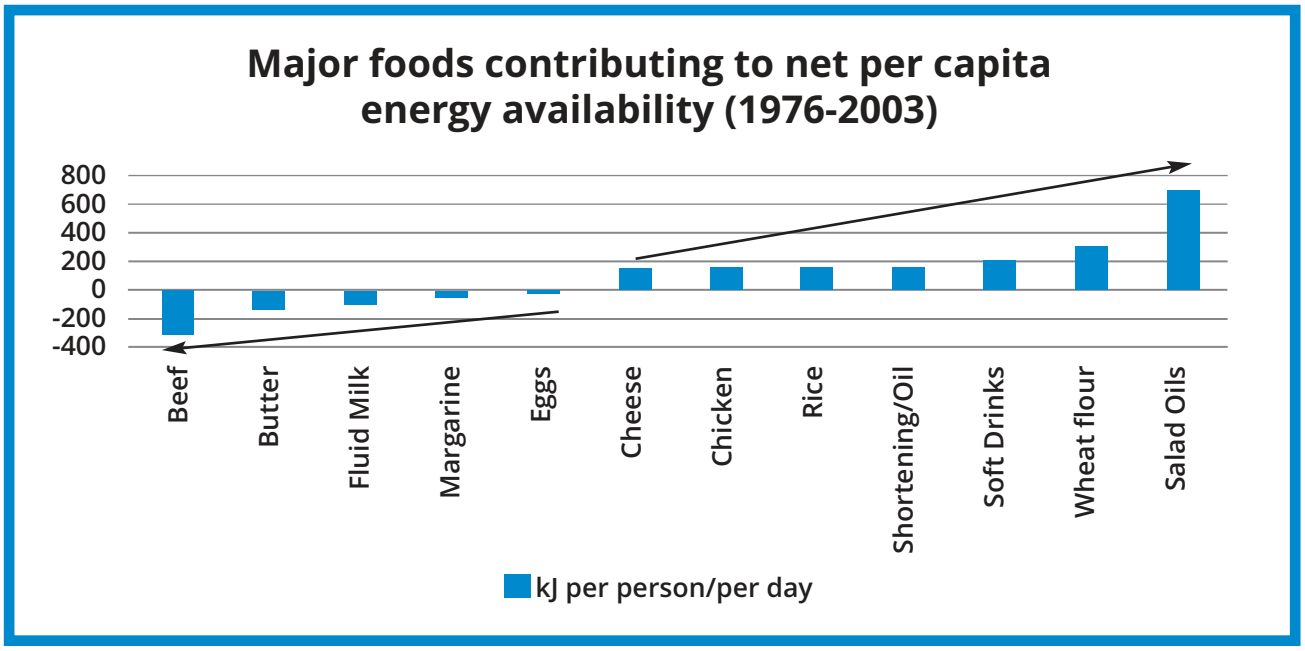
INTRODUCTION

As one of the most nutrient dense foods available, meat makes an important contribution to the food security and diet quality of Canadians. Meat provides high-quality protein and essential micro-nutrients such as vitamin B_{12}, iron and zinc – nutrients that can be difficult to obtain in adequate quantities from plant-source foods alone. As a nourishing foundational food, meat provides satiety and a concentrated source of vital nutrients for both the amount of food and calories consumed.

The purpose of this Brief is to provide factual information about meat, and beef specifically. As one of nature's powerful protein options, there is reason to consider that meat has an important role to play in a healthy eating pattern and belongs as part of the food guide healthy plate.

HEALTH CRISIS IN CANADA

Trend data indicates that Canadian eating patterns have shifted over the past 10 years, away from foundational foods like beef, eggs and milk to ingredients used to make energy-dense fast-food items such as pizza, chicken fingers, sweet baked goods and sugar sweetened beverages.[i] These are worrisome food choices for the health of Canadians.



Source: Statistics Canada, Agriculture Division - Slater J et al. Public Health Nutrition 2009 ; 12(11) ;2216-24

Alarmingly, nearly half (48%) the calories consumed by Canadians currently come from ultra-processed foods.[ii] Perhaps not surprisingly, adult obesity rates have almost doubled in 30 years[iii] and diabetes tripled in 20.[iv,v]

MEAT CONSUMPTION REALITY CHECK

Meanwhile, meat consumption is trending downwards. On average, Canadians have dropped off over a full serving of fresh red meat per week (over 100 grams/week or 14 grams daily) between the 2004 and 2015 Canadian Community Health Surveys (CCHS), with both males and females consuming less meat.[vi] Canadians are eating 41 grams a day or three to four, 75-gram servings of red meat (beef, pork, lamb or veal) a week.

With only 5% of our total calorie intake coming from fresh red meat, Canadian consumers are not overeating red meat. At 288 grams on average consumed each week, these moderate amounts in the Canadian diet are well within the WHO recommendations of 500 grams fresh red meat weekly. Reducing consumption further is not warranted and may have a negative impact on the health of those consumers at risk for iron and protein deficiency such as older and younger women and children.

Average Grams Per Day 2004 vs. 2015

	2004			2015		
	Both sexes	Males	Females	Both sexes	Males	Females
Beef, pork, lamb, veal	53.5	68.6	38.6	41.1	52.3	30.3

Health Canada reported some subgroups of the population had intakes below the minimum servings recommended of meat and alternatives:

- 57% of boys 14-19 years
- 48% of women 31-50 years
- 69% of women 70+ years

Perhaps not surprisingly, many people – especially women and older adults – have inadequate dietary intakes of iron, zinc and vitamins B_6 and B_{12}. Consequences of inadequate intakes include low energy levels, reduced work capacity, lower resistance to infections and fatigue.[viii,ix]

Health Consequences of Inadequate Intakes of Essential Nutrients Found in Meat

Nutrient	Important Sources	Health Consequences of Inadequate Intakes
Iron	Meat, poultry and fish are the only sources of highly bioavailable heme iron. Plant foods contain only non-heme iron which is less well absorbed by the body. Meat helps the body absorb iron from plant foods.	• Low birth weight • Impaired mental function • Impaired learning ability • Impaired energy metabolism • Fatigue • Reduced work capacity • Depression • Lower resistance to infections
Zinc	The zinc from foods of animal origin, rich in high quality protein, is more easily absorbed by the body than the zinc from plant foods. Meat helps the body absorb zinc from plant foods.	• Low birth weight • Impaired mental function • Impaired learning ability • Delayed development • Growth stunting in children • Lower resistance to infections
Vitamins B_{12} & B_6	Foods of animal origin are the primary natural source of vitamin B_{12} and an important source of vitamin B_6.	• Impaired energy metabolism • Poor brain growth • Delayed development • Impaired mental function • Impaired learning ability

RED MEAT AND FAT

Concerns of fat intakes from red meat should be considered in the context of the current daily fresh red meat consumption data. It is estimated that red meat accounts for just 7% of our total daily calories from fat, and less than 10% of our saturated fat intake comes from fresh red meat. It is important to note that just as with other foods such as olive oil, the fat in red meat is not all saturated. For example, over half the fat in beef is monounsaturated, the same type of 'healthy fat' found in avocados and olive oil. It is important to note that 13% of the saturated fat in beef is stearic acid, a saturated fatty acid shown to have little effect on blood cholesterol levels. Even olive oil contains 14% saturated fat.

PLANT PROTEIN CONSUMPTION

It is important to eat an abundance of plant foods for the fibre and the unique set of nutrients that these foods provide such as folate and antioxidents. Canadians are recognizing this and are incorporating more plant foods, including plant proteins into their diet. The 2015 CCHS data found on any given day, almost half Canadians eat plant protein: 33.7% from nuts and seeds and 14.3% from legumes.[x] Another survey found 53% of Canadians have eaten processed meat alternatives with veggie-burgers the most popular choice.[xi]

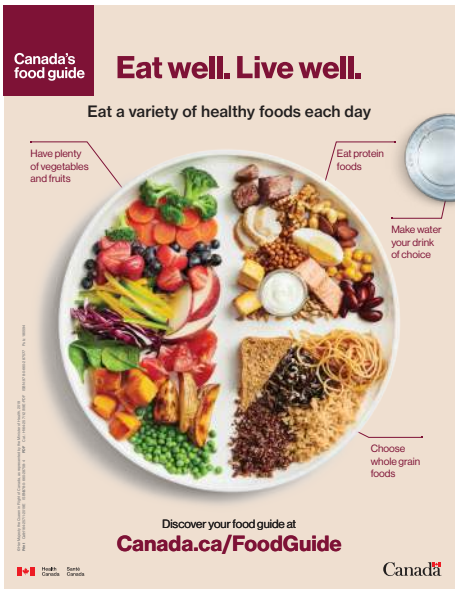
Although plant-protein burgers or meat-like products are often perceived and marketed as healthier options than meat burgers, many of these products are largely ultra-processed. For example, Beyond Meat Burger™, has 22 ingredients plus 11 added nutrients to mimic the nutrient profile of traditional beef burgers.[xii] They also have more calories and sodium than the traditional beef burger offered at the same establishment.

And although foods like almonds and seeds are sources of protein, these foods are generally consumed as snack-foods; not as part of a meal. These foods generally do not encourage a balanced plate of ½ vegetables and fruits and ¼ whole grains. Statistic Canada data indicates that those who consume more meat-based diets tend to fill more of their plate with vegetables and fruits.

CONFUSION SURROUNDING THE NEW CANADA'S FOOD GUIDE

There is much discussion about Canada's Dietary Guidelines which encourage more plant-based proteins in the diet.[xiii] Media coverage highlighted the misunderstanding and misinterpretation of the food guide snapshot. Confusion lies in discussions about:

- what comes off the plate to make room for more plant-foods,
- perceived nutrient equivalence of the protein options,
- whether there is a call to action to reduce red meat and dairy
- does the food guide snapshot visual portray serving size recommendations – so a quarter of an egg would be the allotment for the day, and
- why saturated fat recommendations aren't in sync with those of the Heart and Stroke Foundation of Canada?



This confusion spurred a group of 3,500 concerned Canadian physicians and allied health providers to express concern that plant-based diets may have unintended, but not unforeseen, consequences.[xiv] Furthermore, they do not approve of the advice to reduce fat or saturated fat as the way to healthier diets. They advocate for a whole foods approach to eliminate as much sugar, high glycemic index carbohydrate, and highly processed foods from our diet. Some feel the plant vs. animal debate is an unwelcome distraction based on personal beliefs, not science.

UNDERSTANDING THE DIFFERENCES BETWEEN PLANT VS. ANIMAL PROTEIN SOURCES

Education is necessary to understand that plant and animal proteins are not equivalent. It is important to note the following:

- **Protein quality** refers to the balance of the amino acids, the digestibility of the protein to release the amino acids for absorption, and the availability of the absorbed amino acids for protein synthesis. Using FAO's digestible indispensable amino acid score (DIAAS) cereal proteins are limited in lysine, threonine and tryptophan and legumes are limited in sulphur amino acids.[xv] All nine essential amino acids are found in meat.

- **Protein claims** cannot be made on most plant-based proteins, such as nuts, seeds and legumes. These plant foods don't meet the label guideline criteria to make a nutrient content claims of 'excellent source', very high in', or 'rich in' for protein.[xvi] It is a matter of protein density or concentration – or simply put, how much protein is available per quantity or serving of a food. Animal food protein sources like eggs and meat are more protein rich than plant-food sources, so you need to eat more servings of plant-sources like nuts, beans and lentils to get the same amount of protein from meat, poultry, eggs or fish. This is an especially critical consideration for those with smaller appetites like seniors or children. Plant-protein foods champion fibre and folate as their key nutrient benefits. Animal-protein foods champion vitamin B_{12} (the only food source), iron, zinc and choline. Dairy champions calcium. It is important to have a variety of protein options to meet your nutrient needs – it is not a matter of one or the other.

- **Protein to calorie ratios** are lower for animal than plant proteins. There are greater calorie implications when choosing plant-based protein foods yet if the amounts fall short, the protein requirements will not be met. The ideal approach to healthy eating is combining animal and plant proteins to capitalize on the unique nutrients contained in each. You benefit from the food synergies and obtain a wider range of nutrients necessary for optimum health.

Protein foods differ: protein density

	AMOUNT	CALORIES	PROTEIN
Beef (cooked)	100 grams = 1 serving*	245	35 grams
Almonds	approx 3/4 cup (5.5 servings); 2 tbsp = 1 serving*	960	35 grams
Peanut butter	approx 10 tbsp (10 servings); 1 tbsp = 1 serving*	865	35 grams
Hummus	approx 1-3/4 cups (14.75 servings); 2 tbsp = 1 serving*	735	35 grams
Black beans (cooked/canned)	approx 2 cups (4.3 servings); 1/2 cup = 1 serving*	520	35 grams

Source: Health Canada, Canadian Nutrient File, 2015, Beef 6172, Almonds 2534, Peanut Butter 6289, Hummus 4870, Black Beans 3377
*Table of Reference Amounts for Food:https://www.canada.ca/en/health-canada/services/technical-documents-labelling-requirements/table-reference-amounts-food/nutrition-labelling.html

PROTEIN RECOMMENDATIONS CONSIDERED TOO LOW

Experts suggest adults may need more protein than the current Recommended Dietary Allowance (RDA) of 0.8 grams of protein per kilogram of body weight. Studies suggest 1.0 - 1.2 grams protein per kilogram body weight is ideal to stimulate muscle growth. Estimates of 25 to 30 grams of high-quality protein foods at breakfast, lunch and dinner gives adults the best chance to maintain or improve muscle mass. Even greater benefits may be seen when combined with physical activity.[xvii]

According to the Institute of Medicine, the acceptable macronutrient distribution range, or AMDR, for protein is 10 to 35% of total daily calories a day for adults [xviii] The 2015 CCHS data found adults are at the lower end of the acceptable range at 17% of calories from protein.[xix]

ANIMAL AND PLANT FOODS ARE BETTER TOGETHER

Food synergy is the idea that eaten in combination, foods interact to deliver greater nutritional value than if they are eaten separately.

Known as the 'meat factor', eating beef or other meats, poultry or fish with vegetable/plant sources of iron and zinc improves the absorption of these nutrients.[xx] For example, adding some ground beef to your bean chili allows you to absorb 150% more iron from the beans than if you ate a vegetarian version of the dish. There are other food synergies that come to play in combining foods such as adding fruit that is high in vitamin C (e.g., strawberries, cantaloupe, citrus) with oatmeal will enhance your body's ability to absorb iron from the cereal. Adding calcium-rich milk or yogurt to a green smoothie can help bind oxalates from greens such as spinach, an important consideration for people with calcium oxalate kidney stones.

When meat anchors the plate, vegetables fill more of the plate. According to the 2015 CCHS data, adults who ate about a 80-gram portion of meat also consumed more vegetables and fruit.

½ cup portions vegetables and fruit/1 cup leafy vegetables	Grams meat consumed
1 to 4	46.1
5 to 6	62.6
7 to 8	70.0
9 to 10	79.4

The food guide encourages Canadians to combine vegetables, fruits and whole grains with high quality protein like meat. The nutritional benefits aren't found in highly processed foods, vitamin pills or other nutrition supplements such as protein powder and protein bars. Whole foods make great nutritional sense.

ADDRESSING THE HEADLINE INTERPRETATIONS OF THE FOOD GUIDE

Sensational headlines that claimed the food guide recommended a reduction or elimination of red meat are false and do a disservice to Canadians since we are already eating moderate amounts of meat. The food guide does not make this recommendation as lean meats are represented along with other protein food options.

The World Cancer Research Fund (WCRF) recommends a limit of 100 grams red meat a day to reduce the risk of colorectal cancer.[xxi] On average, Canadians consume less than half that amount. WCRF's advice is relevant to people who eat meat in quantities inconsistent with healthy eating. This is not the way Canadians eat.

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Global Report WCRF	Canadian Consumption 2015 CCHS Data
Found increased risk of colorectal cancer at over 100 grams of red meat a day	41.1 grams a day
Dietary goal for red meat consumption is limiting to 350 to 500 grams cooked weight a week	288 grams cooked weight a week

The WCRF acknowledges red meat is a valuable source of nutrients, in particular protein, iron, zinc and vitamin B_{12}. These are the very nutrients some women are not getting enough of in their diets.

Nutrients of Concern (usual intakes below requirement, CCHS 2004)	
Iron	18% women
Zinc	41% older men 25% older women
Vitamin B_{12}	16% adolescent girls 15% older women

EATING PATTERNS AND ENVIRONMENTAL IMPACT CONSIDERATIONS

The discussion about the environmental impacts of food systems should be a thoughtful conversation as there is no simple black and white answer. Whether growing lentils or raising beef cattle, the act of getting food to our tables has environmental impacts and benefits that need to be assessed as a whole and can vary widely depending on the country of production context and even from the varying production practices within a single country.

- In Canada, cattle spend 80% of their lives getting feed-stuffs from grazing on pasture or prairie, which maintains important grassland habitats.[xxii] The grasslands cattle maintain provides 68% of the wildlife habitat capacity of all the agricultural land in Canada.[xxiii] If we don't have cattle, we will lose those habitats.
- Cattle graze on land not suitable for growing other food, so they produce food for us from lands not capable of doing so otherwise. Only 9% of crops are used to feed cattle.[xxiii]
- In the greenhouse gas discussion, it is important to consider that Canada's pasture and prairie store up to 1.5 billion tons of carbon, equal to 3.62 million cars annually.[xxiv] Cultivation of these lands releases carbon stores and reduces carbon store capacity. Cattle are what keep grass lands going.
- As well, consider that transportation in Canada accounts for 28% of our GHG emissions while cattle account for 2.4%.[xxv, xxvi] Transportation of food-stuffs needs to be part of the carbon foot print consideration.
- Cattle are 'up-cyclers'. The unique digestive system of ruminants like cattle can eat food-stuffs we can't digest like grass turn it into a powerful protein for us.[xxvii]
- Cattle are key to sustaining soil, with the nutrients from manure for healthy grass. Healthy grass offers cover for the soil that protects it from blazing sun, pounding rains and drying winds.[xxiii]

Cattle are a perfect fit with our Canadian landscape. The action of cattle grazing provides an eco-service to conservation efforts that should not be taken for granted.

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