

Plant-based meat nutrition: the facts

Making meat in safer, more efficient ways

Plant-based meat is a market-based solution that can feed a growing global population while building a more stable food system, stemming antibiotic resistance, and meeting climate goals.

Plant-based meat often joins conventional animal meat in consumers' baskets, and consumers perceive plant-based alternatives to processed meat favorably.^{1, 2} Therefore, it's important to ask: How does the nutrition of plant-based meat compare to the meat it replaces?³

Plant-based meats generally have fewer calories and less saturated fat than animal-based meat. They have zero cholesterol and almost always contain fiber. Although different plant-based meats have different formulations, comparing some of the most popular products on the market with conventional options gives us a good sense of how the category generally stacks up.

Product	Calories	Total fat (Percent of calories)	Sat. fat	Fiber	Protein (Percent of calories)	Sodium*	Cholesterol
Beef: serving size 113g (quarter pound)							
Conventional 80/20 ground beef USDA	290	23g (70%)	9g	0g	19g (27%)	75mg	80mg
Beyond Burger Beyond Meat	230	14g (55%)	5g	2g	20g (35%)	390mg	0mg
Impossible Burger Impossible Foods	240	14g (53%)	8g	3g	19g (32%)	370mg	0mg
Vegan Meat Lovers Burger MorningStar Farms	270	16g (53%)	2.5g	4g	27g (40%)	330mg	0mg
Chicken: serving size 95g							

Product	Calories	Total fat (Percent of calories)	Sat. fat	Fiber	Protein (Percent of calories)	Sodium*	Cholesterol
Conventional Chicken Nuggets Tyson**	290	18g (57%)	4g	0g	15g (21%)	500 mg	40mg
Beyond Chicken Tenders Beyond Meat**	250	14g (51%)	2.5g	2g	15g (25%)	530mg	0mg
Impossible Chicken Nuggets Impossible Foods	240	12g (45%)	1.5g	2g	13g (22%)	480mg	0mg
Veggie Chick'n Nuggets MorningStar Farms**	210	9g (38%)	1g	4g	14g (27%)	330mg	0mg

Data collected February 2022

* Plant-based meats are seasoned at point of sale and conventional meat is not. See below for more details.

**These serving sizes have been standardized to 95 grams for ease of comparison.

Isn't plant-based meat ultra-processed?

Food processing is not inherently bad. The golden rule of effectively processing food is “nothing bad added, nothing good taken away.” Processing cacao beans, for example, removes the cocoa butter, which is high in saturated fat, and leaves behind cocoa powder, which contains anti-inflammatory flavanols. In that case, processing the raw food enhances its healthfulness.

“Ultra-processed” foods take food processing techniques to the next level to make foods like chips, sodas, and candy bars hyperpalatable. Many nutritionists would recommend choosing fruits,

vegetables, or nuts as snacks. Compared with minimally processed foods, ultra-processed foods generally have less (or zero) fiber and a lot more sugar, total fat, saturated fat, sodium, and calories.^{4,5}

Plant-based meat is not here to replace apples or kale. Consumers are often choosing plant-based meat to reduce their animal meat consumption. Thus, plant-based meats can be a better choice because they have more fiber, less fat, and fewer calories than what people may otherwise eat.

While data from randomized controlled trials are still limited, initial studies have demonstrated that swapping conventional animal meat for plant-based meat can, in

fact, lower cardiovascular disease risk factors, improve gut health, be more conducive to a healthy weight, and support muscle growth.

Heart disease and saturated fat

Both saturated fat and cholesterol are linked to coronary heart disease, which affects more than 18 million Americans.^{6,7,8} ² Stanford medical school researchers publishing in the *American Journal of Clinical Nutrition* in 2020 found that consuming Beyond Meat products instead of organic chicken and organic grass-fed red meat led to statistically significant reductions in saturated fat intake as well as improvements in LDL cholesterol and heart disease risk factors. Even though participants ate the same amount of food in both the plant-based and animal-based conditions, weight was significantly lower in the plant-based condition.¹⁰ In other words, plant-based meat led to weight loss and reduced cardiovascular risk factors relative to the consumption of organic animal-based meat.

Fiber and the gut

Gut microbiota metabolize fiber into health-promoting short-chain fatty acids, which may help regulate blood pressure, blood glucose, and lipid metabolism.¹¹ Consuming dietary fiber can help prevent and decrease type 2 diabetes, cardiovascular disease, stroke, and colon cancer.^{12, 13} The average American gets less than half their recommended daily value of dietary fiber,¹⁴ but substituting plant-based meat for conventional can help close this gap. A 2021 randomized controlled trial found that replacing conventional meat with plant-based meat about five times per week increased participants' weekly fiber

consumption by an average of approximately 19 grams and increased fiber-metabolizing pathways in their gut microbiota.¹⁵ Similarly, Stanford scientists found that eating Beyond Meat instead of organic animal-based meat increased fiber intake by 35 grams per week on average — a 22% increase.¹⁶

Protein and muscle growth

Alternative proteins contain a comparable amount of protein to conventional meats, and many plant-based products exceed animal-based protein content. In a randomized controlled trial published in the *American Journal of Clinical Nutrition*, male athletes who consumed Quorn's mycoprotein (a fungi-based product) after strenuous exercise more than doubled their muscle growth rates relative to athletes who consumed milk protein afterward.¹⁷

Sodium and seasoning

Alternative proteins often replace processed meats, which are high in sodium — as shown in the nugget nutrition facts above. Commercially available plant-based meats contain more sodium than unprepared meat. For example, a Beyond or Impossible burger provides roughly 16 percent of the recommended daily value of sodium. However, alternative proteins have already been seasoned at the point of sale and conventional unprepared meat has not. The difference shrinks dramatically after meal preparation: For instance, the Impossible Whopper contains only 10 percent more sodium than the traditional Whopper.¹⁸ Simply adding cheese to the Whopper contributes more than 3.5x the sodium that swapping a conventional patty for the Impossible does.¹⁹ In the Stanford trial, there was no statistically significant

difference in sodium intake or blood pressure across the plant-based and conventional meat conditions.²⁰

Preservatives

Unlike processed meats (i.e., bacon or hot dogs), alternative proteins do not use nitrite and nitrate preservatives, which produce N-nitroso chemicals that can lead to bowel cancer.²¹

Product development

Alternative proteins can continue to be enhanced through product reformulation efforts that improve their nutrition. The ingredients currently used in plant-based meat are not fully optimized for this purpose, so the alternative protein industry is working within the limits of the existing supply chain.²² Ongoing research may enable plant-based meat producers to use even more nutritious crops, ingredients, and processes; further optimize fat content; and more.²³

What isn't visible on the nutrition facts panel

An estimated 70 percent of medically important antibiotics are sold for use in animal agriculture.²⁴ Overuse of antibiotics fuels antibiotic-resistant disease, which causes more than 2.8 million antibiotic-resistant infections and 35,000 deaths in the U.S. annually.²⁵ The production of alternative proteins does not require antibiotics. Further, due to the end-to-end process control, alternative proteins have orders of magnitude less bacterial contamination, which reduces the risk of foodborne illness.

Alternative proteins benefit planetary health and public health, and the evidence suggests that eating alternative proteins in lieu of conventional meat can be good for individual health as well.

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