

Education and Transparency in Labeling Plant-Based Meat Alternatives



A Consumer-Focused Agenda to Improve Understanding and
Decision-Making of Plant-Based Meat Products

June 2022

PREFACE

Innovation is a cornerstone of the U.S. food industry. No place is this more evident than with the rapidly growing market for plant-based meat alternatives (PBMA) – a category of foods made with plant-based ingredients that mimic the appearance and texture of traditional meat. As a response to consumers’ interest in adding more plant-based foods to their diets, so-called “meatless meats” are now offered everywhere – from fast food chains to restaurants to grocery meat cases – with more

PBMA products entering the market every day.



It is easy to understand consumers’ excitement about plant-based products that closely resemble the look, feel, and taste of burgers, sausages, deli meat, and other products made from beef, pork, chicken, eggs, and seafood. Polling shows consumers’ top reason for

buying these products is the perceived healthfulness.¹ The most sought-after benefits consumers cite are heart health and a good source of high quality and complete protein.¹

What many consumers do not understand is that plant-based meat products vary in their formulations, nutritional content; and some may be high in saturated fat and sodium. These products are often packaged in the same way as their animal protein counterparts and routinely sold next to the meat section in supermarkets. Thus, Americans need clarity in labeling to ensure product names, descriptions, and packaging of PBMA use the qualifying terms so consumers can make informed decisions.

As the agency that regulates plant-based foods in the U.S., the Food and Drug Administration (FDA) shares this viewpoint. Thus, FDA announced that it will issue draft guidance on the labeling of plant-based milks and plant-based alternatives to “animal-derived foods” (meats) in the first half of 2022.² The new guidance falls under the umbrella of FDA’s Nutrition Innovation Strategy, which addresses the need for FDA to modernize its regulatory approach for new categories of foods, like PBMA, developed through the latest technologies. As such, FDA’s draft guidance will be based on principles established under the Strategy, including requirements for labeling to:

- Promote honestly and fair dealing in the interest of consumers
- Describe the basic nature of the food to ensure consumers are not misled by the name of the food and to meet consumers’ expectations of product characteristics and uniformity
- Reflect the essential characteristics of the food or those that define or distinguish a food or describe the distinctive properties of a food
- Ensure the food does not appear to be better or of greater value than it is
- Use names and descriptive terms that are not misleading to consumers

With these core principles as the guidepost, FDA has sought information on a range of issues in developing its draft labeling guidance, such as consumer understanding and perceptions of plant-based alternatives and whether the public is aware of the nutritional differences between traditional meat and dairy products and their plant-based substitutes. In response, the agency has received thousands of comments from industry groups, manufacturers, academic institutions, and professional societies offering their viewpoints.

However, the National Consumers League (NCL) contends that the consumer's voice must be articulated and translated into policies that provide balanced, science-based perspectives. Unless the information needs of consumers are clearly defined, FDA's goal of labeling for transparency and clarity will not be realized.

To provide the consumer perspective, especially regarding decisions about plant-based meat alternatives, NCL built on the deliberations of an online expert panel meeting between the League and the Academy of Nutrition and Dietetics (AND) hosted in November 2021. Addressing the question of whether new standards of identity (SOI) could lead to improved consumer understanding, perception, and decision-making of PBMA products, the meeting examined the growing market for PBMA products and current public opinion and misperceptions. This set the stage for a robust discussion where regulatory specialists, market researchers, consumer advocates, and food industry leaders discussed consumers' needs for accurate naming, labeling, and claims on the package of PBMA products and how modernized standards of identity might address these needs.

The November 2021 meeting produced consensus that there is not enough evidence to support a standard of identity for PBMA products and, in fact, that a SOI could hamper innovation within this new category of plant-based foods. Yet, the meeting also generated important insights from three concurrent breakout sessions where experts recognized the need for consumer education about plant-based meats – a common nomenclature for describing PBMA products – and transparency in labeling so consumers will know the composition of the products they buy.

Thus, when FDA announced plans to issue draft guidance on PBMA products in late January 2022, NCL used presentations from the November 2021 expert meeting and the insights from the breakout sessions as the foundation for developing recommendations for how FDA can use its regulatory authority to ensure labels of PBMA products meet consumers' needs. This entailed conducting a literature review that updated and expanded the marketplace data and opinion research presented at the November forum and added lessons learned from voluntary labeling initiatives, different states that passed legislation to label PBMA products, and other countries that have instituted labeling rules for PBMA products.

This report represents the findings from the review, providing up-to-date information on the issues affecting the labeling of plant-based meat alternatives and the implications for consumer education efforts. And to help guide the development of FDA's draft guidance on the labeling of plant-based alternatives to "animal-derived foods," the report lays out a consumer-focused action agenda with seven priorities for labeling, naming, and marketing plant-based meat alternatives that are in the best interest of consumers. It is hoped this report will be the catalyst for needed action.

Meeting Consumers' Needs for Modernizing Food Standards of Identity: General Principles for Naming and Labeling Plant-Based Meat Alternatives

November 10, 2021

Expert Panel Members

Sally Greenberg

Executive Director

National Consumers League

David Ervin

Vice President for Emerging Proteins (Retired)

Tyson Foods

John Ruff

Interim Chief Science and Technology Officer

Institute of Food Technologists

Kevin L. Sauer, PhD, RDN

President

Academy of Nutrition and Dietetics

Ali Webster, PhD, RD

Director of Research and Nutrition Communications

International Food Information Council

Breakout Session Participants

Participants represented the following organizations:

- Academy of Nutrition and Dietetics
- Alliance for Plant Based Inclusion
- American Society for Nutrition
- Bumble Bee Foods LLC
- Cargill
- Center for Food Integrity
- Change Food
- Consumer Brands Association
- Consumer Federation of America
- Dalhousie University
- Food, Health & Consumer Products of Canada
- Good Food Institute
- Hartman Group, Inc.
- Innova Market Insights
- Institute of Food Technologists
- International Food Information Council
- Kerry Foods
- Motif FoodWorks
- National Cattlemen's Beef Association
- National Pork Producers Council
- New Wave Foods
- Plant-Based Foods Association
- Plant-Based Foods of Canada
- Resnick Center for Food Law and Policy, UCLA School of Law
- Synergy Visions, LLC
- Taste and Nutrition
- The AgriNutrition Edge
- Tofurky
- Tyson Foods
- UC Davis Department of Food Science & Technology University of Massachusetts, Department of Food Science

Executive Summary

The new generation of plant-based meat alternatives (PBMA) has come a long way since the veggie burger of the 1980s. Due to significant strides in product innovation, meatless products engineered to closely resemble the look, feel, and taste of actual beef, pork, chicken, eggs, and seafood are now offered in fast food chain restaurants and grocery meat cases, among others.

Current estimates put the market for PBMA at \$1.4 billion – up from \$962 million in 2019 – and a *Bloomberg Intelligence* report predicts a 500 percent increase in global sales of plant-based foods globally by 2030. Reinforcing these forecasts, a recent report – *Plant-Based Meat Market-Global Industry Analysis (2018-2020) & Growth Trends and Market Forecast (2021-2026)* – projects a compound annual growth rate of almost 20 percent (18.9 percent) globally for plant-based meats between 2021 and 2026 as consumers' appetites for PBMA continue to grow and manufacturers respond with new types of plant-based beef, pork, chicken, seafood, and egg products.

The reason for these promising projections: consumer excitement about plant-based meats. According to the International Food Information Council (IFIC), two-thirds of Americans (65 percent) consumed plant-based meat alternatives in 2021, with two in five (42 percent) eating them at least weekly. The top reasons consumers are opting for more plant-based meats are the perceived healthfulness of these products (39 percent) followed by the belief PBMA are a source of high-quality protein (34 percent) and liking the taste (33 percent). Less of a factor are the environmental sustainability benefits (23 percent).



However, the new generation of plant-based meats differ from the staples of the past made from vegetables and whole grains. To closely replicate the properties of traditional meat, some of the latest PBMA offerings are formulated with coconut or palm oil to create the “mouthfeel” associated with the flavor and taste of meat from animal sources. This adds saturated fat to the PBMA product. Additionally, some plant-based meats may contain artificial fillers; the more processed varieties may be high in sodium; and some PBMA are formulated with genetically modified (GMO) ingredients, which some consumers wish to avoid. Consequently, plant-based meat products vary in their formulations and their nutritional content.

At the same time, plants lack certain nutrients that animal products provide, such as Vitamin B12, zinc, and other minerals, and the same protein quality as traditional meats, which is relevant as a third of consumers are looking for high quality proteins from plant-based foods. Also, consumers with food allergies need to pay attention to the source of plant proteins in the PBMA product because plant-based meats may contain at least one major food allergen among their ingredients.

Thus, consumers need easy-to-understand labeling of plant-based meat alternatives so they will recognize the differences between the basic nature, characteristics, ingredients, and nutritional content of plant-based products and their animal food counterparts. And since plant-based meats are often packaged in the same way as their animal protein counterparts and routinely sold next to the meat section in supermarkets, it is important to have a regulatory framework for labeling PBMA that ensures that claims that imply nutritional superiority or a health benefit are supported by scientific evidence and conform to the same requirements for traditional foods to make health claims. Thus, guidance on implied nutrient content claims for PBMA would be helpful.

As the federal agency that regulates plant-based food products, the FDA shares this viewpoint. Thus, FDA announced that it will issue draft guidance on the labeling of plant-based milks and plant-based alternatives to “animal-derived foods” (meats) in the first half of 2022.² The draft guidance falls under the umbrella of the agency’s Nutrition Innovation Strategy, which addresses the need for FDA to modernize its regulatory approach for new categories of foods, like PBMA, developed through the latest technologies.

In developing its draft labeling guidance, FDA has sought information on a range of issues related to labeling, including whether consumers understand terms like “milk” when used in the name of plant-based alternatives and are aware of the nutritional differences between traditional meat and dairy products and their plant-based substitutes. In response, the agency received more than 13,000 comments from industry groups, manufacturers, academic institutions, and professional societies offering their viewpoints as well as information from a 2018 public meeting on informative food labeling.

However, the National Consumers League contends that the consumer’s voice must be articulated and translated into policies that provide balanced, science-based perspectives. Unless the information needs of consumers are clearly defined, FDA’s goal of labeling for transparency and clarity will not be realized.

To provide the consumer perspective, especially regarding decisions about plant-based meat alternatives, NCL built on the deliberations of an online expert panel meeting – *Meeting Consumers’ Needs for Modernizing Food Standards of Identity: General Principles for Naming and Labeling Plant-Based Meat Alternatives* – co-hosted by the League and the Academy of Nutrition and Dietetics (AND) in November 2021. The meeting started with presentations on the U.S. market for PBMA, how these products are formulated, the nutritional profile of plant-based meats, and consumer perceptions and understanding of plant-based meat alternatives. The forum then featured three concurrent breakout sessions where regulatory specialists, market researchers, consumer advocates, and food industry leaders debated the need for a standard of identity for PBMA and discussed consumers’ needs for education and labeling of PBMA.

The key takeaway from the November 2021 expert panel meeting was there is not enough evidence to support a standard of identity for PBMA and, in fact, a standard of identity could hamper innovation within this new category of plant-based foods. Yet, the meeting generated important insights on the need for consumer education and transparency in labeling of plant-based meats and identified some key areas where FDA policy can help consumers make informed decisions about PBMA by:

- ***Improving consumer understanding of plant-based meat alternatives***
Currently, the public lacks a common understanding of what it means to be “plant-based.” Therefore, labeling of PBMA must be simple, understandable, and clarify for consumers what they are buying.
- ***Ensuring the accuracy of descriptors and visuals on labels and promotional content***
To ensure consumers understand the composition of the PBMA product, labels should contain descriptors that readily identify the protein source. Additionally, because imagery and icons influence consumer perceptions, there is a need for regulatory policy that includes the use of visuals on labels and in promotional content.
- ***Addressing nutritional composition***
PBMA vary in their formulations and nutritional composition, which is why it is important for labeling and education programs to explain “plant-based foods” and inform consumers of the nutritional composition of plant-based meat substitutes and how to compare products.

Thus, when FDA announced plans to issue draft guidance on PBMA in late January 2022, NCL used presentations from the November 2021 expert meeting and the insights from the breakout sessions as the foundation for developing recommendations for how FDA can ensure labels of PBMA products meet consumers’ needs. This entailed conducting a literature review that updated and expanded the marketplace data and opinion research presented at the November forum and added lessons learned from voluntary labeling initiatives, different states that passed legislation to label PBMA, and other countries that have instituted labeling rules for PBMA.

Based on this review, NCL identified some action steps that can significantly impact public awareness and understanding of PBMA and can be readily implemented. As such, NCL created a consumer-focused action agenda for labeling, naming, and marketing plant-based meats alternatives with seven priorities that are in the best interest of consumers.

1. Establish a definition for the category of “plant-based meat alternatives” that will unite all stakeholders

Today, many brands, companies, and organizations define the term “plant-based” differently and there is not collective agreement on definition of a “meat alternative.” Since these terms represent an entire class of food products, FDA guidance should define what constitutes a “plant-based meat alternative” to promote consistency in labeling across the category.

2. Ensure brand names are not deceptive

NCL’s position affirms it is a deceptive practice to use brand names for PBMA’s that suggest a product contains meat, seafood, or eggs when none is present or is better/healthier than the traditional animal protein product. Even when the label states the product contains no meat or eggs, consumers are influenced by the brand name, especially if the packaging and content on the website, social media platforms, and in ads shows pictures and iconography of animals or the type of meat.

3. Require that labels on PBMA’s are standardized and clarify the protein source

For labels of PBMA’s to be transparent, the naming and labeling of PBMA’s must be uniform and consistent and ensure that consumers can readily identify the protein source. Accordingly, FDA should require that all labels and advertisements for PBMA’s must:

- Use a common name that links the protein source and the form, such as “soy burger.”
- Make clear that the product contains some animal protein in addition to plant-based proteins like soy. Qualifying terms can include “plant-based” and “made from plants.”
- Make clear when the PBMA contains no meat. These terms can include “vegan,” “meatless,” “vegetarian,” “veggie,” and “veggie-based” as well as “plant-based” and “made from plants.”
- Place the phrase “contains no meat,” “contains no poultry,” or “contains no eggs” on the principal display panel of vegan PBMA’s near the common name and in letters at least the same size and prominence as shown in the product’s common name.
- Not use pictures, icons, or vignettes on the packaging, in marketing materials or in advertising that suggests nutrition superiority or that the product is the same as the comparable meat product.

4. Regulate health/nutrition claims for PBMA’s

Consistent with how FDA regulates the health claims allowed on traditional food products, FDA must make clear in its guidance that nutrition/health claims must undergo review by the FDA through a petition process and there must be significant scientific agreement that the claim is supported by available scientific evidence.

5. Ensure website, social media, and advertising content for PBMA’s conforms to what is on the product label

The guidance must make clear that FDA considers websites and social media to be an extension of the product label, meaning the claims and information that PBMA manufacturers put online must conform what FDA allows on the label.

6. Address the nutritional composition of the PBMA in FDA guidance

In Canada, proposed guidelines for plant-based meat and poultry products and plant-based protein foods would include nutritionally required amounts of vitamins and mineral nutrients that must be added to the PBMA product and a minimum limit of total protein content, among other requirements. While NCL supports this approach, FDA should at least recommend levels of key vitamins and nutrients in its guidance.

7. Educate consumers about the nutritional composition of plant-based protein alternatives

It is in the public interest for FDA and the US Department of Agriculture – along with nutrition societies – to conduct education programs that explain the nutritional composition of plant-based protein food products. This will allow consumers to make informed decisions based on science-based information.

Plant-based meat alternatives are a popular and valued part of our food supply. That is why the public needs regulatory policies that ensure the labels on these products are accurate, complete, and provide the qualifiers necessary for consumers to understand what they are purchasing.

Introduction

It is not an exaggeration that American consumers are witnessing a revolution in the meat aisle. Although the plant-based meat market is relatively new, a recent report – *Plant-Based Meat Market-Global Industry Analysis (2018-2020) & Growth Trends and Market Forecast (2021-2026)* – projects a compound annual growth rate of almost 20 percent (18.9 percent) globally for plant-based meats between 2021 and 2026 as consumers’ appetites for PBMA continue to grow and manufacturers respond with new types of plant-based beef, pork, chicken, seafood, and egg products.³

What is behind this optimism? One reason is consumer excitement about the promise of PBMA: alternatives to traditional meat products that closely replicate the taste and texture of animal proteins, contain less saturated fat, are a good source of fiber and iron, and are environmentally sustainable. As evidence, 2021 polling conducted for the International Food Information Council (IFIC) showed most Americans had consumed plant-based meat alternatives and others are ready to try them.¹

Another reason for optimism is the rapid innovation in the PBMA category. Driven by consumer preferences, manufacturers are expanding the meat forms where plant-based alternatives offer new product offerings. Thus, in 2021 the fastest growing product types were plant-based meatballs, which grew by 12 percent; plant-based chicken varieties like nuggets, tenders, and cutlets, which grew by 9 percent; and deli slices, which grew by 8 percent.⁴ Additionally, sales of plant-based eggs grew by 42 percent in 2021 while plant-based seafood grew 14 percent to \$14 million.⁴



However, as is the case with every new product category, the need for information about this new generation of plant-based meats is important to ensure Americans know what they are buying. While consumers are generally acquainted with the meat substitutes of the past, many new plant-based meats are created by processing plants and fungus with added ingredients that are designed to closely mimic the flavor, taste, texture, and cooking properties of traditional meat products, such as burgers and nuggets.

For example, some of the latest PBMA offerings are formulated with coconut or palm oil to create the “mouthfeel” associated with the flavor and taste of meat from animal sources. This adds saturated fat to the PBMA product. Additionally, some plant-based meats may contain artificial fillers; the more processed varieties may be high in sodium; and some PBMA are formulated with genetically modified (GMO) ingredients, which some consumers wish to avoid.

At the same time, plants lack certain nutrients that animal products provide, such as Vitamin B12, zinc, and other minerals, and they lack the same protein quality as traditional meats. Moreover, consumers with food allergies need to pay attention to the source of plant proteins in the PBMA product because plant-based meats may contain at least one major food allergen among their ingredients.

Compounding these issues, the introduction and marketing of new PBMA products comes when many assorted brands, companies, and organizations define PBMA differently; and there is a lack of clarity about how to use traditional meat, dairy, and egg terminology on labels of plant-based meat alternatives. As a result, state lawmakers concerned about the potential for consumer confusion have stepped into the breach with nearly 30 laws either passed or under consideration to control how plant-based meats are labeled. While the courts have struck down many of these state laws, others have been upheld.

Considering these developments, now is the time for common-sense, consumer-focused labeling of PBMA that will “empower consumers with information to make more informed dietary choices” – one of the goals of the FDA’s Nutrition Innovation Strategy, intended to promote nutrition knowledge and healthy food access in the marketplace.⁵

Towards this end, NCL built on the deliberations of an online expert panel meeting – *Meeting Consumers’ Needs for Modernizing Food Standards of Identity: General Principles for Naming and Labeling Plant-Based Meat Alternatives* – co-hosted by the League and the Academy of Nutrition and Dietetics (AND) in November 2021. The meeting started with a review of the U.S. market for PBMA, how these products are formulated, the nutritional profile of plant-based meats, and consumer perceptions and understanding of PBMA. This set the stage for three concurrent breakout sessions where regulatory specialists, market researchers, consumer advocates, and food industry leaders debated the value of a standard of identity for PBMA and discussed consumers’ needs for education and labeling of PBMA.

Focusing specifically on the question of establishing a standard of identity (SOI) for PBMA the November 2021 expert panel meeting reached consensus that there is not enough evidence to support a standard of identity for plant-based meats and an SOI could hamper innovation within this new category of plant-based foods. However, the discussions during the breakouts provided insights on the need for consumer education about plant-based meats and transparency in labeling so consumers will know the composition of the products they buy.

Thus, when FDA announced plans to issue draft guidance on PBMA in late January 2022, NCL used the deliberations from the November 2021 expert meeting as the foundation for developing recommendations for how FDA can ensure labels of PBMA products meet consumers’ needs. This entailed conducting a literature review that updated and expanded the marketplace data and opinion research presented at the November forum and added lessons learned from voluntary labeling initiatives and state and international labeling rules for PBMA. NCL’s review also gathered additional insights, especially regarding how some key principles laid out in FDA’s Nutrition Innovation Strategy – a common nomenclature, accurate naming and labeling, and elements that assure honesty and fair dealing – can be applied to improve consumer understanding, perception, and decision-making of PBMA products.

What follows is the result of this review, focusing on seven priorities for the labeling, naming, and marketing PBMA that are in the best interest of consumers. As such, these action steps represent a framework for FDA to ensure that labels on plant-based meat alternatives are accurate, complete, and provide the qualifiers necessary for consumers to understand what they are purchasing.

The State of Plant-Based Meat Alternatives

Plant-based meat alternatives to burgers, bacon, and sausage are now offered everywhere, from fast food chains to restaurants to grocery meat cases, with more entering the market every day. No longer limited to vegan and vegetarian audiences, these products continue to grow in popularity because they are formulated to look, cook, and taste like traditional meat products, making them appealing to estimated 89 percent of Americans who consume meat as part of their diet.⁶

But while today's plant-based meat alternatives represent a sea change in the marketplace, the evolution of this new generation of meatless meats requires an understanding of the history of these products, the current marketplace for plant-based meats in the U.S., how these products are formulated, and their nutritional composition. The following is an overview of this growing category of plant-based foods.

1. The History of Plant-Based Meat Alternatives

Plant-based protein substitutes for traditional meat have been available and eaten for hundreds of years. The best-known meat alternative is tofu, a bean curd derived from soybean, which was first mentioned in the literature in 995 CE. In 1587, information about yuba (tofu skin) appeared in a Chinese text.⁷ Moreover, at least since the 14th century, Asian cultures have used tempeh, another soy-based alternative; seitan, also called wheat gluten; and dried beans, peas, and lentils known as pulses, as healthy sources of protein. Today, these meat analogues are commonplace in the diets of vegans and vegetarians worldwide.⁷



From this beginning, food technology techniques improved, and meat substitutes were introduced to Western nations. This spurred a

growing vegetarian movement in the U.S., especially after Upton Sinclair's damning account of the meatpacking industry led to new federal food safety laws in the 1900s.

In 1896, Dr. John Harvey Kellogg, founder of the Battle Creek Sanitarium, introduced Nuttose, the first commercially available canned meat alternative made primarily from peanuts.⁷ By 1899, his new product made from peanuts and wheat gluten, called Protose, became one of the bestselling commercial meat substitutes in the West.⁸ Dr. Kellogg went on to commercialize a bevy of canned, nut-based mock meats sold in grocery and early health food stores in the early 1900s, netting sales of about \$500,000⁹ – equivalent to over \$17 million today.⁹

John Harvey Kellogg remained actively interested in developing alternative meat products until late in his life and remarkably, Protose, which claimed that it “looks like meat, tastes like meat, smells like meat, has the composition of meat, and even the fiber of meat,” continued to be marketed until around 2000.¹⁰ Other notable developments, spurred by technology and an increased interest in plant-based diets, include the launch of Morningstar Farms brand of frozen meat alternatives in mainstream supermarkets in 1974,⁷ the development of the first commercially sold veggie burger in 1982,⁸ the introduction of Tofurky, an alternative to turkey, in 1995,⁷ and Burger King’s addition of a veggie burger on the menu of more than 8,000 outlets in the U.S. in 2002.⁷

2. The Current Market for PBMA in the U.S.

The new generation of plant-based meat alternatives has come a long way since the veggie burger of the 1980s. Due to significant strides in product innovation, meatless products engineered to closely resemble the look, feel, and taste of actual beef, pork, chicken, eggs, and seafood are now attracting U.S. meat eaters as well as the estimated 10 percent of Americans who are vegans and vegetarians¹¹ and becoming a multibillion-dollar global market.

Focusing specifically on the U.S., the plant-based meat market is a sizable and growing category. The findings of two national surveys of U.S. adults conducted by the International Food Information Council (IFIC) documents a steady increase in consumption of plant-based meat alternatives among U.S. adults since 2019. Compared to 49 percent of Americans who had tried a PBMA product in 2020,¹² in August 2021 a full 65 percent had eaten them within the past year.¹ Also, of note, data from the national survey IFIC fielded in 2021 showed that 20 percent of consumers reported eating plant-based meat substitutes at least weekly and another 22 percent consuming them daily.¹ Among consumers who had not consumed PBMA in 2021, IFIC’s research found that 12 percent indicated their intent to try them in the future and only 22 percent reported no interest in meatless meats.¹

Data from the national survey IFIC fielded in 2021 showed that 20 percent of consumers reported eating plant-based meat substitutes at least weekly and another 22 percent consuming them daily.

Adding to this research, Technomic’s 2021 *Center-of-the-Plate Seafood & Vegetarian Consumer* trend report finds that a third of restaurant diners aged 18 to 34 and 27 percent of older adults are increasingly seeking out vegetarian/vegan entrées as a first choice on menus.¹³ Moreover, with plant-based meat now on the menus of major chain restaurants and a wide variety of veggie-based meat alternatives featured in a separate section of most supermarkets, a 2020 poll by Gallup showed that six in 10 consumers who tried a PBMA product indicated being “very” (27 percent) or “somewhat” (33 percent) likely to continue eating plant-based meats in the future.¹⁴

Due to this growing consumer interest in plant-based meats, current estimates put the market for PBMA at \$1.4 billion – up from \$962 million in 2019.¹⁵ Among the fastest growing product segments, the data company SPINS Omni-Intelligence identified plant-based frozen breakfast entrées, where sales jumped 84 percent for the year ended April 18, 2021; plant-based snacks/appetizers, which grew

by 83 percent in 2021; and plant-based breakfast patties, which experienced a 59 percent increase in sales.¹³ Another popular PBMA category is plant-based frozen meals, where sales reached \$520 million in 2020, up by 29 percent over 2019.¹³

And looking to the future, plant-based meat and poultry substitutes are projected to top \$2 billion in sales by 2024, according to the *2020 Meat, Poultry & Seafood Alternatives* report from Packaged Facts, with beef, pork and chicken representing the fastest growing categories.¹³ Accordingly, Bloomberg Intelligence Report predicts a 500 percent increase in global sales of plant-based foods globally by 2030¹⁶ spurred by a significant investment in companies developing new plant-based food offerings perceived to be more healthful and better for the environment.

Data from the Good Food Institute shows an investment of \$5.1 billion in new plant-based protein products in 2021, up by 61 percent from the \$3.1 billion invested in 2020. This included \$1.9 billion invested in companies marketing plant-based meat, seafood, egg, and dairy alternatives.¹⁷ If this innovation is sustained, the U.S. consulting firm AT Kearney expects alternative meats, including PBMA and cultured meat, to gain ground and contribute around one-third of the global meat supply within the next 10 years.¹⁸

3. Plant-Based Meat Offerings

Plant-based meat alternatives cover almost all animal proteins (beef, pork, chicken, eggs, and seafood) and come in the most common meat forms, such as burgers, patties, meatballs, sausages, nuggets, tenders, cutlets, and even deli slices. Thus, today, there are plant-based meats in every meal category – from breakfast, lunch, and dinner options to snacks and appetizers.

Yet, PBMA can differ significantly depending upon consumer preferences. As described by David Ervin, retired Vice President for Emerging Proteins for Tyson Foods, there are four distinct categories of plant-based protein offerings, some of which are completely meatless while others may be formulated with some dairy or egg ingredients:

- **Proudly Plants** – meatless products that offer tasty alternatives to a meat-based meal but do not attempt to replicate the flavor or texture of meat. Examples include Tuscan white bean and pesto burgers and seitan.
- **Direct Substitutes** – meatless products that are substitutes for common meat-based staples, like veggie dogs, which offer good value.
- **Replicators** – products that closely replicate the flavor, taste, texture, and cooking properties of meat by using advanced processing of plants and fungus.
- **Replacers** – meat grown by culturing cells directly, rather than raising and processing animals for meat (Note: development of cell-based meat is not a focus for this report.)

Due to these expanded choices, PBMA dollar sales in 2021 remained strong, growing 74 percent in the past three years, and outpacing the growth of conventional meat by almost three times.⁴

4. Formulation of Plant-Based Meat Alternatives

Along with the staples of a vegan or vegetarian diet – tofu, tempeh, seitan, and pulses – the market for PBMA includes many plant-based substitutes that are made from vegetables and whole grains that include oats and beans. Additionally, manufacturers use fungi and certain plants, like jackfruit, to produce direct substitutes for meatless burgers, sausages, and other common meat staples due to their texture. For example, the flesh-like texture of oyster and Portobello mushrooms and jackfruit's stringy consistency are often used in plant-based alternatives for shredded beef, pork, and chicken.

The challenge for labeling involves the new generation of PBMA, each of which is unique in the formulation and processing techniques used to closely replicate the properties of traditional animal meats. Recognizing that major differences exist, what can be said is manufacturers combine plant protein with a range of other ingredients to create the taste, appearance of texture of new types of plant-based beef, pork, chicken, seafood, and egg products. As a starting point, most of the new plant-based meats use protein isolates or concentrates from soy, although pea protein is also used.¹⁹ Then, depending on the product, manufacturers may use wheat gluten to create meat-like chewiness or incorporate potato, mung bean, and rice proteins to enhance and alter texture. Further, because animal proteins are more elastic than plant cells, many plant-based meat products are “structurally altered” through different processing methods so the plant proteins are held together.

Beyond the protein sources, manufacturers use additives to match the appearance and texture of traditional meats. This includes blending plant oils (sunflower, canola, sesame, and avocado oils are commonly used) with plant fats to create the mouthfeel and faux marbling associated with animal fats.¹⁷

Manufacturers also use coconut and palm oils, which are more saturated, to lend juiciness that is released at a slower melting point to their plant-based meats, also similar to animal fat.²⁰ Further, some manufacturers attempt to mimic the appearance and taste of red meat by adding a new patented soy compound to imitate heme, the red-colored compound in blood.¹⁷

In terms of approximating the color of traditional meats and poultry products, some of the ways manufacturers give plant-based meat alternatives a reddish meat-like appearance is by using extracts from red beets, red berries, carrots, and other similarly colored vegetables. Similarly, manufacturers may add the colorant titanium dioxide as a whitener and brightener in producing plant-based chicken.¹⁷ As to creating the flavors associated with different meats, in several PBMA, the characteristic “meaty” flavor comes from yeast extracts, but companies also use spices and added sugars.¹⁷ Additionally, manufacturers fortify isolated plant proteins with vitamin B12, zinc, iron, and other nutrients to give PBMA a similar nutritional profile to traditional meats.¹⁸

5. The Nutritional Profile of PBMA

Recognizing that nutrients and foods are not eaten in isolation, the *Dietary Guidelines for Americans 2020-2025*, issued in December 2020, emphasize the importance of a healthy dietary pattern involving

a mix of nutrient-dense foods and beverages. Defined as foods that are high in nutrients but relatively low in calories,²¹ nutrient-dense foods contain vitamins, minerals, complex carbohydrates, lean protein, and healthy fats. Thus, the latest dietary guidelines recommend a dietary pattern rich in vegetables of all types, fruits, and especially whole fruits, whole grains, eggs, peas, beans, and nuts. Reinforcing these dietary recommendations, research shows that a diet high in fruits and vegetables is associated with lower mortality from chronic diseases, including cancer and cardiovascular disease.²² Additionally, results from a meta-analysis of 32 prospective cohort studies demonstrate that higher intake of total protein is associated with a lower risk of all-cause mortality, and the consumption of plant protein is linked to a lower risk of all-cause and cardiovascular disease mortality. Accordingly, the study authors suggest that replacing foods high in animal protein with plant protein sources could be associated with longevity.²³

In terms of research on plant-based meats, the number of studies is limited. Among the studies published to date, a study conducted by researchers at Stanford University found that replacing traditional animal meat with a PBMA product over an 8-week period resulted in improvements in some cardiovascular risk factors.²⁴ Additionally, research funded by the National Institutes of Health showed plant-based meats are a good source of fiber, folate, and iron while containing less saturated fat than ground beef. The study also found that PBMA tend to be high in sodium and may contain lower levels of protein, zinc, and Vitamin B12.²⁵

Other nutritional assessments show minor nutritional differences between traditional meat products and their plant-based alternatives based on the nutrients listed in the Nutrition Facts label. For example, the International Food Information Council conducted a side-by-side comparison of the label of a burger patty made from plants and a 100 percent beef burger patty, showing the plant patty was slightly higher in calories and had more saturated fat and sodium than the beef patty but the plant patty also had more fiber and calcium.²⁶ However, IFIC's analysis also noted that the plant patty has a longer list of vitamins and minerals, many of which are added as ingredients and are not inherently present in the amounts listed on the label.

6. Allergenicity

Because many plant-based meat substitutes contain concentrated protein isolates, consumers may get higher doses of potential allergens. This is especially problematic for those who have an allergy to soybeans and wheat, two of the “big eight” allergenic foods identified by FDA.¹⁷ Thus, consumers with known food allergies need to be alerted to read the labels and pay attention to the source of plant proteins in the PBMA product as they would to all products containing allergens.

7. Bioengineered Ingredients

Similarly, some plant-based meat alternatives contain genetically engineered (GMO) ingredients from the plant sources. Although GMO ingredients have been evaluated for safety and are unlikely to cause adverse reactions, some consumers avoid products that contain them. Under bio-engineered labeling regulations implemented by USDA, any food product that intentionally contains bioengineered ingredients needs to bear a seal identifying the product as derived from bioengineering.²⁷ Thus, manufacturers of PBMA that contain bioengineered proteins provide a disclosure on their products, but consumers will need to look for the seal if they are concerned about these ingredients in their foods.

Understanding Consumers of PBMA's and Their Labeling Preferences

To issue draft guidance on the labeling of plant-based milks and plant-based alternatives to “animal-derived foods” (meats), FDA invited comments from different constituencies on consumer use and understanding of plant-based products. Thus, a key focus of the expert panel meeting was to determine who are today’s consumers of plant-based meats, what is driving their purchasing decisions, how well do consumers understand PBMA's, and what are their concerns about consuming these foods. Below provides a summary of this assessment.

1. Who Are Today’s Consumers of Plant-Based Meat Alternatives?

Information from Nielsen IQ finds that 98 percent of Americans who buy plant-based meat alternatives also eat animal meat.²⁸ Thus, it is no surprise that consumers of plant-based meats come from every demographic category.

Using 2020 statistics from Gallup, 43 percent of women and 39 percent of men consume PBMA's as well as 42 percent of white Americans and 38 percent of non-white Americans.¹⁴ Looking demographically at these consumers, almost half (49 percent) live in suburban areas and 54 percent have higher incomes compared with less than a third of those in lower-income households (31 percent).²⁶ Further, a poll conducted for The Conversation U.S., a nonprofit, independent news organization, found that nearly half (48 percent) of consumers of PBMA's were under age 40 in 2019 while only 27 percent of those ages 40 and above had tried a plant-based meat alternative.²⁹

2. What Is Driving Americans to Consume Plant-Based Meats?

A growing body of research has examined the factors that motivate U.S. consumers to incorporate plant-based meat substitutes into their diets, including taste, healthiness, cost, convenience, improving the environment, and the desire to seek out and try new foods. While all these factors play a role to some degree, consumer surveys show that the greatest drivers of purchase behavior in the U.S. are healthfulness, high quality protein, and taste.

Among the evidence are findings from a national survey conducted in 2021 by the International Food Information Council, which asked 1,001 adult Americans ages 18 to 80 years their top reasons for eating plant-based meat substitutes. From a list of 12 factors, respondents, by a large majority, identified healthfulness first (39 percent), followed by high quality protein source (34 percent) and taste (33 percent). Environmental/sustainability benefits were at distant fourth, at 23 percent.¹

Examining the almost four in ten consumers who ranked healthfulness as the top priority, the IFIC survey found that consuming a high quality/complete protein was the most important health benefit (43 percent), followed by heart health (41 percent) and protein content (40 percent). Complementing IFIC’s findings, a 2020 Mintel consumer survey found that the top motivator for eating plant-based proteins is “to be healthier,” with 56 percent of consumers citing this factor followed by 42 percent who taste as most important.³⁰ Moreover, Mintel data shows consumers are seeking more whole food protein sources, like beans and whole grains, when eating PBMA's and nearly two-thirds (63 percent)

would like more meat alternatives made with whole foods, such as vegetables.³¹ These findings track with IFIC data showing that more than half of consumers would like more PBMA options with vegetable, grain, nut, bean, and lentil-based alternative protein sources.¹

3. Consumer Understanding of Plant-Based Meat Alternatives

There is an extensive debate about how well consumers understand plant-based meat alternatives. As a neutral source, Gallup research finds that only half of Americans say they are “very” (17 percent) or “somewhat familiar” (33 percent) with PBMA and 30 percent have no knowledge.¹⁴

These statistics are not only problematic in themselves, but they are reinforced by the results of a 2019 IFIC survey, which polled consumers on how they define a “plant-based diet.” Because many brands, companies and organizations define “plant-based” differently, the IFIC survey showed that consumers have very different ideas of what “plant-based” means. Specifically, 32 percent of respondents thought a plant-based diet is one that excludes all animal products, including dairy and eggs, while 30 percent defined a plant-based diet as emphasizing minimally processed foods that come from plants with limited consumption of animal meat, eggs, and dairy. Additionally, 20 percent of consumers defined a plant-based diet as one in which eating animal meat is avoided and another 8 percent said this diet is one where people try to get as many fruits and vegetables as possible, with no limit on consuming animal meat, eggs, and dairy.³²

What these findings make clear is many consumers may not understand the term “plant-based.” Therefore, an immediate priority for public policy is to agree on a standard definition of what “plant-based” means so there is a common nomenclature for describing PBMA products across different meat forms.

4. Use of Descriptors for Plant-Based Meat Alternatives

To develop its draft guidance on the labeling of plant-based milks and plant-based alternatives to “animal-derived foods,” FDA requested information on how consumers perceive and understand the terms used in labels of plant-based foods. Specifically, the agency stated its interest in learning how labeling helps consumers understand the differences between the basic nature, characteristics, ingredients and nutritional content of plant-based products and their animal food counterparts.

Contributing to this process, a recent online survey of U.S. adults provides valuable insights about the use of descriptors on labels of plant-based meats.² In the survey, consumers were shown images of a plant-based alternative of a burger and a strip-shaped product that resembled a chicken tender and given a list of terms to describe both products. When shown the burger image and given a list of possible descriptors, survey respondents chose “plant-based burger” (39 percent included in their top three choices) followed by “veggie” burger” (35 percent) and “meatless burger” (35 percent) as the best descriptors. Similarly, respondents opted for “plant-based chicken” (45 percent), “meatless chicken” (42 percent), and “vegan chicken” (32 percent) as the best descriptors for the chicken tender substitute.¹

At the same time, the survey showed that putting primary ingredients front and center in the descriptor enhances consumer understanding. When told the burger product was made primarily from soy protein, the top-ranked descriptions became more soy-specific, showing the value of transparency in primary ingredients. In the case of the burger, “soy burger” (42 percent) rose to the top of the list of preferred terms, followed by “soy-based burger” (39 percent) and “soy patty” (34 percent). In this context, only 22 percent of those polled found “plant-based burger” to be a top descriptor. Similar trends were seen when respondents were shown an image of a strip-shaped product that resembled a chicken tender.¹

What these findings make clear is that consumers prefer labels for PBMA that link the protein source and the form, such as “soy burger.” Consumer advocates also stress the importance of adding qualifying terms that makes plain the plant-based meat product contains no meat and to place the descriptors in a prominent position on the display panel. This is the format the Plant Based Foods Association (PBFA) specifies in a set of voluntary labeling standards the association released in December 2019 to promote consistency in labeling across the category.³³ The standards apply to meatless plant-based alternatives and specify a nomenclature for labeling in four areas:

- **References to types of animal-meat** – using words that describe a characterizing flavor, texture, usage, or style, such as “hamburger” and “sausage”
- **Forms of the product** – words that describe the shape or form of the product, such as “nuggets,” “tenders,” burgers,” and “patties”
- **Qualifiers** – words that make clear the product contains no meat. Permissible qualifying terms include “plant-based,” “vegan,” “meatless,” “vegetarian,” “veggie,” “made from plants,” and “veggie-based”
- **Placement of qualifying terms** – calls for putting the qualifying terms in the statement of identify or in a prominent position on the display panel

As referenced earlier in this report, not all PBMA are completely meatless: some products are formulated with some dairy or egg ingredients. Thus, PBFA’s approach can be utilized for these products but with qualifiers indicating the product contains some animal protein in addition to plant-based proteins like soy.

5. Implied Claims of Nutrition Superiority or Greater Healthfulness

While the labeling terms described above will promote consumer understanding and informed purchasing decisions about plant-based meat alternatives, the National Consumers League and other consumer organizations remain concerned about descriptors that may influence consumers’ perceptions or expectations regarding the nutritional properties or improved health benefits of PBMA. This includes terms, such as “plant-powered protein,” “heart healthy protein,” and “nutritious protein,” that suggest nutrition superiority of the substitute PBMA product over the original animal protein version.

Documenting this problem, *Consumer Reports* conducted a national survey of 1,003 U.S. adults in October 2018 about their perceptions of plant-based milks. When these respondents were read the

terms above that imply nutrition superiority, 58 percent said plant-based milks are healthier than cow's milk.³⁴

Of added concern, the poll revealed that more than half of Americans who purchased plant-based milks in 2018 said they did not read the ingredients list the last time they purchased one of these products. This underscores the importance of FDA policy that ensures descriptors on labels as well as pictures, icons, or vignettes on packaging, in marketing materials or in advertising do not suggest nutrition superiority.

Beyond these steps, NCL contends that health claims made for PBMA's and other plant-based substitute foods must be consistent with FDA regulations for traditional food products. Thus, in FDA's draft guidance, the agency should make clear that nutrition/health claims for PBMA products must follow the process required for all other foods and undergo review by the FDA through a petition process and there must be significant scientific agreement that the claim is supported by available scientific evidence. Moreover, because USDA regulates animal meat – including pork, beef, and poultry – and FDA has authority over the plant-meat alternatives of these foods, consumers will benefit if USDA and FDA harmonize their regulatory approaches, especially to ensure accurate and consistent labeling.

Regulatory Approaches and Labeling Insights

As the federal agency that regulates plant-based food products, the Food and Drug Administration understands the need for draft guidance – which describes FDA’s interpretation of policy on regulatory matters – on widely consumed novel food products. Thus, after instituting its Nutrition Innovation Strategy in 2018 to promote nutrition knowledge and healthy food access in the marketplace, FDA issued a request for comments that same year on the labeling of plant-based dairy foods using names such as “milk,” “yogurt,” and “cheese.”³⁵

As FDA stated in its *Federal Register* notice, these products are often packaged in the same kinds of cartons, tubs, or bottles as their dairy counterparts and sold adjacent to the dairy display in stores. But plant-based milks may not have the same basic nature, essential characteristics, and characterizing ingredients as their dairy counterparts; and some may contain less nutrients than their dairy counterparts.

The same issues apply to plant-based meat alternatives, which is why FDA signaled its intention to issue draft guidance on both plant-based milks and plant-based alternatives to “animal-derived foods” (meats) in 2022.² Hopefully, these regulatory frameworks will reflect the more than 13,000 comments FDA received on labeling plant-based milks as well as information from a 2018 public meeting on informative food labeling.

At the same time, FDA could benefit from the core principles for accurate, informative, and clear nutrition and health information on labels developed by the Academy of Nutrition and Dietetics, lessons learned from different states that passed legislation to label PBMA, and insights from other countries that have instituted labeling rules for PBMA. A short summary of this information follows.

1. Principles for Nutrition and Health Information on Food Labels

As the world’s largest organization of nutrition and dietetics professionals, the Academy of Nutrition and Dietetics (AND) advocates for accurate, informative, and clear labels on all food and beverage products. Thus, it is AND’s position that manufacturers follow some core principles for presenting nutrition and ingredient information and making health claims. As summarized by Dr. Kevin L. Sauer, President of the Academy of Nutrition and Dietetics and professor of food, nutrition, and dietetics at Kansas State University, these principles include:

- Content on the label should help consumers make informed decisions
- Labeling information must be truthful and not misleading
- Labeling claims should be clear and understandable to consumers
- Labels should help provide consumer understanding of the nutrient density and healthfulness of the overall food, rather than focus on a nutrient or set of nutrients
- Label content should have a consistent type and format so consumers can make informed product comparisons
- Labeling should enhance consistency among government and nutrition recommendations for healthful eating

- All claims should be science-based and contain accurate qualitative information about a dietary substance
- The label is only a source of information about a food or beverage product; nutrition education is important to augment the label with additional evidence-based facts about the product

2. Insights from the States

Focusing specifically on plant-based meat alternatives, the absence of FDA guidance created a vacuum that was filled by state laws governing how PBMA labels should be labeled. In 2019 alone, nearly 30 states passed or considered legislation to restrict how plant-based meats may be labeled.³⁶ These state “truth in labeling” laws have been met with a barrage of lawsuits and are not providing consistent labeling PBMA labels that consumers can understand.

Yet, there are lessons to be learned from some approaches states are taking. As one example, the Missouri Meat Advertising Law, enacted in 2018, requires plant-based meat substitutes to include a prominent label on the front of the package stating the product is “plant-based,” “veggie,” or another comparable qualifier. Moreover, products must include a prominent statement that the product is “made from plants” or a comparable disclosure.³⁷

Additionally, Missouri issued labeling rules that food regulation lawyers consider noteworthy for not misleading consumers. This includes requirements that:³⁸

- A plant-based food label shall not be false or misleading
- A plant-based food product should not be labeled as a “meat” or “meat food product.” However, a plant-based product will not be considered labeled as a “meat” or “meat food product” if one or more of the following terms, or a comparable qualifier, is prominently displayed on the front of the package: “meat free,” “meatless,” “plant-based,” “veggie-based,” “made from plants,” “vegetarian,” or “vegan”
- A plant-based food product label that does not contain one or more of the terms or qualifiers listed above may be subject to further examination by the Commissioner

3. Approaches in Other Countries

In addition to how states approach PBMA labeling, regulations in other countries governing the labeling of plant-based meat, poultry, and egg products provide insights for US policymakers.

For example, in Canada, proposed guidelines for plant-based meat and poultry products and plant-based protein foods outline rules for labelling, advertising, composition and fortification for these products.³⁹ This includes nutritionally required amounts of vitamins and mineral nutrients that must be added to the PBMA product, minimum requirements for total protein content and protein rating, as well as limits for fat content.^{40,41}

In terms of naming and labeling, Canada’s proposed guidelines would require that the product labels and advertisements for all PBMA labels must:

- Use the common name “simulated” in front of the name of the meat or poultry
- Put the phrase “contains no meat” or “contains no poultry” on the principal display panel near the common name and in letters at least the same size and prominence as shown in the product’s common name
- Not use pictures or vignettes on the packaging that suggests that meat is present

In the European Union, rules on the labeling of food products are detailed in the Food Information to Consumers Regulation (FIC)⁴² and state that: “Food information shall not be misleading... by suggesting, by means of the appearance, the description or pictorial representations, the presence of a particular food or an ingredient, while in reality a component naturally present or an ingredient normally used in that food has been substituted with a different component or a different ingredient.” Thus, there is a focus on visuals as well as the terminology used and how descriptors appear on the display panel.

Also of note is Singapore, which considers alternative proteins a way to meet the country’s food challenges. To ensure consumer trust in plant-based meat products, Singapore has implemented labeling regulations that require companies to use qualifying terms, such as “mock” so consumers can easily tell the food does not contain animal ingredients. Singapore also requires food establishments to clearly communicate to their customers the true nature of the foods sold.⁴³

4. Voluntary Industry Standards

As described previously, the Plant-Based Foods Association issued a set of voluntary standards to promote consistency in labeling across the category. Released in December 2019, PBFA’s voluntary standards start with a common definition for plant-based and vegetarian “meat alternatives” now on the market. Specifically, PBFA’s voluntary standards define a meat alternative as “a solid food produced mainly with plant-based ingredients that may have textural, flavor, appearance or other characteristics typically associated with animal-meat based products but that is free of meat of any animal.”³³

Applying this definition, the voluntary standards specify a suggested nomenclature for labeling meat alternatives in four areas: 1) references to types of animal meat, 2) forms of the product, 3) qualifying terms (e.g., plant-based or veggie), and 4) placement of the qualifying terms in the statement of identify or in a prominent position on the display panel.

Articulating a Consumer-Focused Policy Framework for Plant-Based Meat Alternatives

Plant-based meat alternatives (PBMA) continue to grow in popularity because consumers like the option of adding more plant-based foods to their diets, especially when the meat substitute tastes, looks, and acts very similar to traditional meat products. In 2021, two-thirds of U.S. adults (65 percent) had tried a PBMA product and 42 percent reported eating plant-based meats at least weekly. Moreover, a 2020 poll found that 60 percent of consumers who tried a PBMA product were “very likely” (27 percent) or “somewhat likely” (33 percent) to continue to eat plant-based meats in the future.¹

This optimism about plant-based meats has been a driving force behind a significant investment in companies developing new plant-based food offerings perceived to be more healthful and better for the environment. Today, there are plant-based meat alternatives for every type of animal meat (beef, pork, chicken, eggs, and seafood), which are available in every meal category – from breakfast, lunch, and dinner options to snacks and appetizers. And looking to the future, the U.S. consulting firm AT Kearney expects alternative meats, including PBMA and cultured meat, to gain ground and contribute around one-third of the global meat supply within the next 10 years.

Yet, for this prediction to be realized, consumers must understand plant-based meat alternatives and know how to compare them to traditional meat sources. This means having easy-to-understand labeling that will recognize the differences between the basic nature, characteristics, ingredients, and nutritional content of plant-based products and their animal food counterparts.

It also means a regulatory framework that promotes “honesty and fair dealing in the interest of consumers” – one of the requirements under FDA’s Nutrition Innovation Strategy for the naming, labeling and claims allowed for novel foods – by preventing descriptors on labels of PBMA products that imply nutrition superiority or a health benefit unless these claims are supported by available scientific evidence and companies follow the same FDA regulations required for traditional foods to make health claims.

As the federal agency that regulates plant-based food products, the FDA shares this viewpoint. Thus, FDA announced that it will issue draft guidance on the labeling of plant-based milks and plant-based alternatives to “animal-derived foods” (meats) in the first half of 2022.² The draft guidance falls under the umbrella of the agency’s Nutrition Innovation Strategy, which addresses the need for FDA to modernize its regulatory approach for new categories of foods, like PBMA, developed through the latest technologies.

In developing its draft labeling guidance, FDA has sought information on a range of issues related to labeling, including whether consumers understand terms like “milk” when used in the name of plant-based alternatives and are aware of the nutritional differences between traditional meat and dairy products and their plant-based substitutes. In response, the agency received more than 13,000 comments from industry groups, manufacturers, academic institutions, and professional societies

offering their viewpoints as well as information from a 2018 public meeting on informative food labeling.

However, the National Consumers League contends that the consumer's voice must be articulated and translated into policies that provide balanced, science-based perspectives. Unless the information needs of consumers are clearly defined, FDA's goal of labeling for transparency and clarity will not be realized.

To provide the consumer perspective, especially regarding decisions about plant-based meat alternatives, NCL built on the deliberations of an online expert panel meeting – *Meeting Consumers' Needs for Modernizing Food Standards of Identity: General Principles for Naming and Labeling Plant-Based Meat Alternatives* – co-hosted by the League and the Academy of Nutrition and Dietetics (AND) in November 2021. The meeting started with presentations on the U.S. market for PBMA, how these products are formulated, the nutritional profile of plant-based meats, and consumer perceptions and understanding of plant-based meat alternatives. The forum then featured three concurrent breakout sessions where regulatory specialists, market researchers, consumer advocates and food industry leaders debated the need for a standard of identity for PBMA and discussed consumers' needs for education and labeling of PBMA.

The key takeaway from the November 2021 expert panel meeting was there is not enough evidence to support a standard of identity for PBMA and in fact, a standard of identity could hamper innovation within this new category of plant-based foods. Yet, the meeting generated important insights on the need for consumer education and transparency in labeling of plant-based meats and identified some key areas where FDA policy can help consumers make informed decisions about PBMA by:

- ***Improving consumer understanding of plant-based meat alternatives***
Currently, the public lacks a common understanding of what it means to be “plant-based.” Therefore, labeling of PBMA must be simple, understandable and clarify for consumers what they are buying.
- ***Ensuring the accuracy of descriptors and visuals on labels and promotional content***
To ensure consumers understand the composition of the PBMA product, labels should contain descriptors that readily identify the protein source. Additionally, because imagery and icons influence consumer perceptions, there is a need for regulatory policy that includes the use of visuals on labels and in promotional content.
- ***Addressing nutritional composition***
PBMA vary in their formulations and nutritional composition, which is why it is important for labeling and education programs to explain “plant-based foods” and inform consumers of the nutritional composition of plant-based meat substitutes and how to compare products.

Thus, when FDA announced plans to issue draft guidance on PBMA in late January 2022, NCL used presentations from the November 2021 expert meeting and the insights from the breakout sessions as the foundation for developing recommendations for how FDA can ensure labels of PBMA products meet consumers' needs. This entailed conducting a literature review that updated and expanded the

marketplace data and opinion research presented at the November forum and added lessons learned from voluntary labeling initiatives, different states that passed legislation to label PBMA, and other countries that have instituted labeling rules for PBMA.

Based on this review, NCL identified action steps that can significantly impact public awareness and understanding of PBMA and can be readily implemented. As such, NCL created a consumer-focused action agenda for labeling, naming, and marketing plant-based meats alternatives with seven priorities that are in the best interest of consumers.

1. Establish a definition for the category of “plant-based meat alternatives” that will unite all stakeholders

Today, many brands, companies and organizations define the term “plant-based” differently and there is not collective agreement on definition of a “meat alternative.” Since these terms represent an entire class of food products, FDA guidance should define what constitutes a “plant-based meat alternative” to promote consistency in labeling across the category.

2. Ensure brand names are not deceptive

NCL’s position is that it is a deceptive practice to use brand names for PBMA that suggest a product contains meat, seafood, or eggs when none is present or is better/healthier than the traditional animal protein product. Even when the label states the product contains no meat or eggs, consumers are influenced by the brand name, especially if the packaging and content on the website, social media platforms and in ads shows pictures and iconography of animals or the type of meat.

3. Require that labels on PBMA are standardized and clarify the protein source

For labels of PBMA to be transparent, the naming and labeling of PBMA must be uniform and consistent and ensure that consumers can readily identify the protein source. Accordingly, FDA should require that all labels and advertisements for PBMA must:

- Use a common name that links the protein source and the form, such as “soy burger.”
- Make clear that the product contains some animal protein in addition to plant-based proteins like soy. Qualifying terms can include “plant-based” and “made from plants.”
- Make clear when the PBMA contains no meat. These terms can include “vegan,” “meatless,” “vegetarian,” “veggie,” and “veggie-based” as well as “plant-based” and “made from plants.”
- Place the phrase “contains no meat,” “contains no poultry,” or “contains no eggs” on the principal display panel of vegan PBMA near the common name and in letters at least the same size and prominence as shown in the product’s common name.
- Not use pictures, icons, or vignettes on the packaging, in marketing materials or in advertising that suggests nutrition superiority or that the product is the same as the comparable meat product.

4. Regulate health/nutrition claims for PBMA

Consistent with how FDA regulates the health claims allowed on traditional food products, FDA must make clear in its guidance that nutrition/health claims must undergo review by the FDA

through a petition process and there must be significant scientific agreement that the claim is supported by available scientific evidence.

5. Ensure website, social media, and advertising content for PBMA conforms to what is on the product label

The guidance must make clear that FDA considers websites and social media to be an extension of the product label, meaning the claims and information that PBMA manufacturers put online must conform to what FDA allows on the label.

6. Address the nutritional composition of the PBMA in FDA guidance

In Canada, proposed guidelines for plant-based meat and poultry products and plant-based protein foods would include nutritionally required amounts of vitamins and mineral nutrients that must be added to the PBMA product and a minimum limit of total protein content, among other requirements.⁴¹ While NCL supports this approach, FDA should at least recommend levels of key vitamins and nutrients in its guidance.

7. Educate consumers about the nutritional composition of plant-based protein alternatives

It is in the public interest for FDA and the US Department of Agriculture – along with nutrition societies – to conduct education programs that explain the nutritional composition of plant-based protein food products. This will allow consumers to make informed decisions based on science-based information.

Plant-based meat alternatives are a popular and valued part of our food supply. That is why the public needs regulatory policies that ensure the labels on these products are accurate, complete, and provide the qualifiers necessary for consumers to understand what they are purchasing.

####

References

- ¹ International Food Information Council. Consumption Trends, Preferred Names and Perceptions of Plant-Based Meat Alternatives. November 3, 2021. <https://foodinsight.org/consumption-trends-plant-based-meat-alt>
- ² Food and Drug Administration. Foods Program Guidance Under Development. January 31, 2022. https://www.fda.gov/food/guidance-documents-regulatory-information-topic-food-and-dietary-supplements/foods-program-guidance-under-development?utm_medium=email&utm_source=govdelivery
- ³ ResearchandMarket.com. Plant-Based Meat Market-Global Industry Analysis (2018-2020) & Growth Trends and Market Forecast (2021-2026). January 11, 2022. <https://www.researchandmarkets.com/r/jly560>
- ⁴ Plant-Based Foods Association. 2021 US Retail Sales Data for the Plant-Based Foods Industry.
- ⁵ Food and Drug Administration. FDA's Nutrition Innovation Strategy. Douglas Stern, Deputy Director for Regulatory Affairs, Center for Food Safety and Applied Nutrition. Slide deck September 26, 2018. <https://www.fdli.org/wp-content/uploads/2018/09/945-Doug-Stearn-Keynote-Address.pdf>
- ⁶ Ipsos survey. Nearly nine in ten Americans consume meat as part of their diet. May 12, 2021.
- ⁷ Soyinfo Center. History of Meat Alternatives (965 CE to 2014). 2014
- ⁸ Manksy M. We're Entering a New Age of Meatless Meat Today: But We've Been Here Before. Smithsonian Magazine. April 25, 2019.
- ⁹ CPI Inflation Calculator. \$500,000 in 1899 is worth \$17,319,518.07 today.
- ¹⁰ Library of Congress. "The Battle Creek Diet System." A Pamphlet and Birth of the Fake Meat Industry. February 19, 2020.
- ¹¹ Alliance for Science. "1 in 10 Americans say they don't eat meat – a growing share of the population." March 10, 2022. <https://allianceforscience.cornell.edu/blog/2022/03/1-in-10-americans-say-they-dont-eat-meat-a-growing-share-of-the-population/>
- ¹² International Food Information Council. Consumer Survey on Plant-Based Meat Alternatives. January 30, 2020.
- ¹³ Institute of Food Technologists. What to Watch for as the Plant-Based Market Grows. August 1, 2021.
- ¹⁴ Gallup. Four in Ten Americans Have Eaten Plant-Based Meats. January 28, 2020
- ¹⁵ Good Food Institute. US retail market data for the plant-based industry. Accessible at: <https://gfi.org/marketresearch/>
- ¹⁶ Fortune. Plant-based food sales are expected to increase fivefold by 2030. August 11, 2021. Accessible at: <https://fortune.com/2021/08/11/plant-based-food-sales-meat-dairy-alternatives-increase-by-2030/>
- ¹⁷ Good Food Institute. Press Release. "Record \$5 billion invested in alt proteins in 2021, surging 60 percent since 2020." March 2, 2022.
- ¹⁸ AT Kearney. How Will Cultured Meat and Meat Alternatives Disrupt the Agricultural and Food Industry? June 17, 2019.
- ¹⁹ Institute of Food Technologists. Caldwell JM, How Safe Are Plant-Based Meat Alternatives? Food Technology Magazine. February 1, 2021.
- ²⁰ Zanteson L. Plant-Based Meat Alternatives. Today's Dietitian. Vol. 23; No. 8, P. 42
- ²¹ National Cancer Institute. Dictionary of Cancer Terms.
- ²² Wang DD, et al. Fruit and Vegetable Intake and Mortality. Circulation. Vol. 23; No. 17, April 27, 2021
- ²³ Naghshi N, et al. Dietary intake of total, animal, and plant proteins and risk of all cause, cardiovascular, and cancer mortality: systematic review and dose-response meta-analysis of prospective cohort studies. BMJ 2020; 370: BMJ20; m2412
- ²⁴ Crimarco A, et al. A randomized crossover trial of the effect of plant-based compared with animal-based met on trimethylamine-N-oxide and cardiovascular disease risk factors in generally healthy adults: Study with Appetizing Plantfood-Meat Eating Alternative Trial (SWAP-MEAT). Am J Clin Nutri. 2020 Nov 11;112(5):1188-1199
- ²⁵ Harnack L, et al. Nutrient Composition of a Selection of Plant-Based Ground Beef Alternative Products Available in the United States. Journal of the Academy of Nutrition and Dietetics. Vol. 121, Issue 12, 2401-2408.
- ²⁶ IFIC Food Insight. Plant-Based Meat Alternatives: Are They Healthy? March 13, 2020
- ²⁷ USDA Agricultural Marketing Service. Fact Sheet. What is a Bioengineered Food? <https://www.ams.usda.gov/rules-regulations/be/consumers>
- ²⁸ Nielsen Insight Analysis 2019. The F Word: Flexitarian Is not a curse to the meat industry. <https://nielseniq.com/global/en/insights/analysis/2019/the-f-word-flexitarian-is-not-a-curse-to-the-meat-industry/>
- ²⁹ The Conversation. Americans, especially millennials, are embracing plant-based meat products. October 21, 2019.
- ³⁰ Mintel. U.S. Plant-based Proteins Market Report 2021. <https://store.mintel.com/report/us-plant-based-proteins-market-report>
- ³¹ Institute of Food Technologists. Sloan AE. What to Watch for as the Plant-Based Market Grows. August 1, 2021.
- ³² International Food Information Council. 2019 Food and Health Survey. May 2019.

-
- ³³ Plant Based Foods Association. Voluntary Standards for the Labeling of Meat Alternatives in the United States: Meat Alternatives. December 2019. <https://www.plantbasedfoods.org/wp-content/uploads/PBFA-Labeling-Standards-for-Meat-Alternatives.pdf>
- ³⁴ Consumer Reports Survey Research Report. Plant-Based Milk Survey: 2018 Nationally Representative Phone Survey. October 31, 2018. [https://advocacy.consumerreports.org/wp-content/uploads/2019/02/2018-Plant-Based-Milk-Survey - Public-Report-1.pdf](https://advocacy.consumerreports.org/wp-content/uploads/2019/02/2018-Plant-Based-Milk-Survey-Public-Report-1.pdf)
- ³⁵ Federal Register. Food and Drug Administration. Use of the Names of Dairy Foods in the Labeling of Plant-Based Products. September 28, 2018. Docket No. FDA-2018-N-3522
- ³⁶ Jones Day. White Paper. The Complex Labeling Landscape for Plant-Based Meat Alternatives, January 2020.
- ³⁷ Mississippi Department of Agriculture. Public Statement- Meat Labeling. August 30, 2018
- ³⁸ Miss. Code Ann. §75-33-5, Labeling of Plant-Based Foods § 112.01, November 6, 2019
- ³⁹ Canadian Food Inspection Agency (CFIA), Proposed Guidelines on Simulated Meat and Poultry Products, and Plant based Protein Foods. July 19, 2021.
- ⁴⁰ Government of Canada. General information on simulated meat and simulated poultry products. November 11, 2020
- ⁴¹ Government of Canada. Proposed guidelines for simulated meat and simulated poultry products. December 3, 2020
- ⁴² Chatham House. Meat Analogues: Considerations for the EU. Research Paper February 19, 2019
- ⁴³ Singapore Food Agency. Safety of Alternative Protein. July 15, 2021.

Education and Transparency in Labeling Plant-Based Meat Alternatives:

A Consumer-Focused Agenda to Improve Understanding And Decision-Making of Plant-Based Meat Products

About the National Consumers League

Founded in 1899, National Consumers League (NCL) is the nation's oldest private, nonprofit education and advocacy organization representing consumers in the marketplace and in the workplace. NCL sponsors education programs for consumers and provides government, businesses, and other organizations with the consumer's perspective on policy matters and industry practices. NCL also works to shape legislative and regulatory actions affecting consumers, including long advocating for comprehensive food and drug labeling.



June 2022