

Regulation and Labeling of Plant-Based Beverages and Simulated Meat, Poultry, and Egg Products in Canada and the United States

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ABSTRACT

Globally, there is a movement toward plant-based diets. At the root of this movement are many different motivators, including concern for animal welfare, concern for the environment and sustainability, and the perceived healthfulness of plant-based compared with animal-based diets. A dilemma in the introduction of innovative plant-based foods is their naming. The names of many common foods (e.g., milk, yogurt, meat) are defined in food standards, which outline the source and compositional requirements for a food to be labeled with the common name. Food standards are regulations, and regulations are technically legally binding and have the force of law, although, of course, they are subject to interpretation. In the United States, food standards have resulted in tremendous contention, both at the state and federal levels. Equally problematic is the composition of plant-based foods, which is largely unregulated in the United States, resulting in a plethora of plant-based foods that differ from each other and from their animal-based counterparts in their nutritional compositions. In Canada, the situation is quite different. Indeed, most plant-based foods are regulated by standards of identity, which define not only the nutritional compositions of the foods, but also their naming. An understanding of the regulatory environment in each country, globally, is fundamental in the development and successful marketing of plant-based foods.

Plant-based diets are diets comprised mainly of foods derived from plants, with little to no foods of animal origin, such as meat, eggs, and dairy products (12,15). In the last few years, the adoption of plant-based diets has gained increasing popularity in Western societies (4,13,14). With increased innovation in plant-based foods, an increasingly perplexing question has been what these foods should be called.

Although many consumers do not realize it, there exist standards of identity that prescribe the compositional and nutritional attributes of a food that is marketed under a given and common name. For example, “milk” is associated with a standard of identity, both in the United States (in 21 CFR 133.3(a)) and in Canada (in Section B.08.003 of the *Food and Drug Regulations*) (6,22). In both countries, milk is defined as the lacteal secretion obtained from the mammary gland of the cow, genus *Bos*. Foods that do not meet the compositional requirements for milk technically should not be labeled as “milk.” Indeed, in Can-



ada, plant-based dairy substitutes are referred to as “beverages” and not “milks” (8). In the United States, the controversy is very strong, with proponents arguing that the use of the term “milk” in the labeling of plant-based beverages is perfectly acceptable, so long as “milk” is prefaced by the source (e.g., “oat milk”).

As innovation in plant-based foods increases in response to consumer demand, controversy with respect to the labeling and naming of these foods is expected to intensify, as many common food names—“yogurt,” “cheese,” “sour cream,” “meat,” “sausage,” “stew,” etc.—are actually defined in regulations and associated with food standards. These, and the names of other standardized foods, have been used in the naming of plant-based alternatives (e.g., plant-based “meat”), but this has been challenged by the meat and dairy industries, which have collectively taken the position that standardized terms should be used only if the food meets the conditions set out in the standard. In the United States, the debate is so intense that, in March 2019, the Dairy Pride Act (20) was reintroduced in Congress in an attempt to stop the use of terms like “milk,” “yogurt,” and “cheese” in the labeling of plant-based products. Likewise, the Real Marketing Edible Artificials Truthfully (MEAT) Act was introduced to the U.S. Senate in December 2019 (21). If passed, it would require all plant-based meat products to have the term “imitation” either immediately before or after the name of the food, as well as a statement that clearly indicates the product is not derived from, or does not contain, meat. At the level of each individual state, there are additional ongoing initiatives to either permit or restrict the use of standardized names in the labeling of plant-based products.

In determining what a plant-based food product should be named, consumer understanding of the origin of the food and its nutritional attributes must be taken into account. In a survey of 1,000 American adults, conducted by the International Food

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Information Council Foundation, 72–75% of those surveyed were able to identify that plant-based milks (i.e., rice, almond, cashew, soy, and coconut) do not contain cow's milk (10). However, according to another online survey of adults aged 18 years and older residing in the United States, 78, 74, and 62% of respondents believed that almond, soy, and coconut milk, respectively, contained about the same amount or more protein as cow's milk (11). Plant-based milk alternatives are manufactured by extracting plant material, such as almond, soy, oats, rice, cashew, and coconut, with water (15,16,23). Compared to cow's milk, plant-based beverages, except for soy beverages, tend to contain lower amounts of protein and essential amino acids (i.e., methionine, lysine, and tryptophan), which are crucial for the growth, repair, and maintenance of body tissues (17,18). Thus, without the addition of essential amino acids, the replacement of traditional dairy milk with plant-based beverages could have adverse and unintended health consequences, including in infancy and early childhood (24), adolescence (1,5), and senescence (9). Also, without fortification, plant-based beverages are often associated with lower micronutrient intakes, such as calcium, vitamin D, and vitamin B₁₂ (17–19). Although plant-based beverages can be fortified with protein, calcium, and vitamins, plant-based beverages are not standardized in all regions of the world, and so their compositions can vary significantly. In a study by Sousa and Kopf-Bolan (18), of 45 plant-based beverages sold in a supermarket chain in Switzerland, only 33% were fortified with calcium and 14% were fortified with one or more vitamins (i.e., vitamin D, B₂, or B₁₂).

Although milks obtained from the lacteal secretions of mammary glands are standardized in Canada and the United States, plant-based beverages do not have standards of identity. However, in recognition of the potential use of plant-based beverages as dairy milk substitutes, and the importance of ensuring adequate nutrition, Health Canada was petitioned by the industry, more than 20 years ago, to allow for the fortification of plant-based beverages with certain vitamins and minerals. This allowance was formalized by Health Canada in an Interim Marketing Authorization (IMA), which is a process that was enacted in Canada in 1997 as a means of selling a food that is not in compliance with the *Food and Drug Regulations* until the regulations can be amended (8). The IMA expired before the regulatory amendments were made. Health Canada is currently examining the most appropriate tool to accomplish the regulatory changes. In the meantime, it has published an Interim Policy on the Use of Expired IMAs Related to Food Fortification, in which it is explicitly stated that, given the reliance of certain populations on plant-based beverages as dairy milk alternatives, the fortification of plant-based beverages, in line with the expired IMA, will be permitted to continue (8). Plant-based beverages that are fortified in Canada must meet compositional requirements for certain vitamins and minerals (i.e., vitamins A, D, and B₁₂; riboflavin; calcium; and zinc), fats (i.e., total, saturated, and *trans* fats and linoleic acid), and protein (i.e., plant-based beverages must contain at least 2.5 g of a protein that is at least 75% the quality of casein per 100 mL; otherwise, they must be labeled as “not a source of protein”) (8). Also of note, fortified plant-based beverages cannot have added to them ingredients derived from animal-based milks or milk products (8). There are additional vitamins and minerals that can be added to plant-based beverages as optional ingredients (i.e., vitamins B₆ and C, thiamine, niacin, folacin, pantothenic acid, phosphorus, potassium, and magnesium); however, if voluntarily added, these nu-

trients must be at the levels indicated in the IMA (8). With regard to labeling, the IMA specifies that the product is to be called “fortified (naming the plant) beverage” (8). The expired IMA remains in effect Canada. In the United States, plant-based beverages are not standardized, and therefore, they vary widely in their nutritional compositions. However, voluntary fortification of plant-based beverages is permitted in the United States.

In Canada, there are also standards for simulated meat, poultry, and egg products. These standards establish the minimum requirements for total protein content and protein rating, as well as limits for fat content. Although isolated amino acids may be added to simulated meat and poultry products, these can be added only at levels not exceeding the amount needed to improve the nutritional quality of the protein. Finally, vitamins and minerals that must be present in the final simulated meat, poultry, or egg product, and their minimum required levels, are prescribed. The labeling of simulated meat, poultry, and egg products is highly regulated in Canada (2,3,7). All simulated meat and poultry product labels and advertisements must use the common name, “Simulated (naming the meat or poultry).” In addition, the phrase “contains no meat” or “contains no poultry” is required on the principal display panel of the label in close proximity to the common name and in writing that is of equal or greater prominence with the product's common name (2,3,7). Likewise, it must be made clear to the consumer that a product is a simulated egg product by utilizing terms such as “imitation,” “substitute,” or “simulated” in product labeling and advertising (3).

In determining whether foods should be fortified with vitamins and minerals, Health Canada considers Principle 5.1 of the *General Principles for the Addition of Essential Nutrients to Food* published in the *Codex Alimentarius*, under the Joint Food and Agriculture Organization of the United Nations and World Health Organization Food Standards Programme (8). Specifically, “Where a substitute food is intended to replace a food which has been identified as a significant source of energy and/or essential nutrients in the food supply, and particularly where there is demonstrated evidence of public health need, nutritional equivalence in terms of the essential nutrients of concern should be strongly recommended.” Essentially, in recognition that plant-based beverages and simulated meat, poultry, and egg products may replace their nonimitation counterparts, Health Canada has put into place provisions to ensure that plant-based beverages and simulated meat, poultry, and egg products provide similar nutrients at levels similar to their nonimitation counterparts.

Unlike in Canada, in the United States, plant-based beverages and simulated meat, poultry, and egg products are largely unstandardized, resulting in a plethora of products on the market with widely varying nutritional compositions. Voluntary fortification of plant-based beverages and simulated meat, poultry, and egg products is permissible in the United States, so it is possible to deliver plant-based alternatives that match or are superior in nutritional composition compared with nonsimulated counterparts. An understanding of the differences between countries in terms of the standardization of plant-based beverages and foods is needed to ensure plant-based products are in compliance with regional regulations. Where plant-based beverages and foods are not standardized, an understanding of the nutritional profiles of the animal-based foods that are intended to be replaced can help ensure the development of plant-based foods with optimal nutritional compositions that are highly competitive in the marketplace.

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