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## NOTES

### DAIRY BELOVED: WHY INDIANA SHOULD STOP LABELING PLANT-BASED BEVERAGES AS “MILK”

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#### I. INTRODUCTION

While waiting in line at your favorite local coffee shop, you hear a barista yell out “I have a medium iced, sugar-free vanilla latte with soy milk for Megan!” Shortly after, you overhear the man in front of you order a “large hot chocolate with coconut milk, hold the whipped cream.” All the while, you are scanning the menu on the wall, debating whether you want almond or oat “milk” in the caramel macchiato you are about to order. Despite the differences between these drinks, they all have one thing in common – none of them are milk.

The market of non-dairy alternatives in the grocery store or at the local coffee shop seems to be growing by the day. Beyond the traditional nonfat and whole milk options that have been around for decades, beverages made out of soy, almonds, rice, cashews, coconut, oats, hemp, hazelnuts, macadamia nuts, flax, peanuts, tiger nuts, walnuts, spelt, quinoa, and even peas, line the shelves of supermarkets across the world.<sup>1</sup> If a shopper does not know what they are looking for, it is easy to see how confusing the milk market has become. To add to the issue, these non-dairy alternatives are more often than not found in the same type of carton or bottle as traditional cow’s milk and are sometimes even on the same shelves.<sup>2</sup> If a buyer is uninformed about what a product touting the label “almond milk” really means, he may not realize the vast differences that exist between what he is about to buy and what he is probably expecting. These differences include taste, smell, color, overall flavor, consistency, functional properties, and even shelf life.<sup>3</sup> The most impactful, and potentially detrimental, difference is the

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1. Oliver Franklin-Wallis, *White Gold: The Unstoppable Rise of Alternative Milks*, GUARDIAN (Jan. 29, 2019, 1:00 PM), <https://www.theguardian.com/news/2019/jan/29/white-gold-the-unstoppable-rise-of-alternative-milks-oat-soy-rice-coconut-plant> [https://perma.cc/9MM4-Z85G].

2. *See id.*

3. *See Use of the Names of Dairy Foods in the Labeling of Plant-Based Products*, 83 Fed. Reg. 49,103, 49,104 (Sept. 25, 2018).

great disparity in nutritional value between milk and its substitutes.<sup>4</sup>

The legal and policy battles between the dairy industry and the rising plant-based alternative industry have been increasing over the last few years, especially as concerns for animal ethics, environmental protections, and health issues continue to increase.<sup>5</sup> At the center of this ongoing conflict is the vastly different nutritional status and quality of dairy milk and plant-based alternatives. When considered together with the ever-changing ways that consumers view their health and societal trends, the recognition and emphasis of the differences between cow milk and its alternatives is more important now than ever.

Allowing milk's plant-based counterparts to be labeled as "milk" is confusing to consumers, especially from a nutritional perspective. The Food and Drug Administration ("FDA") regulates the standard of "milk" and other dairy terms,<sup>6</sup> and to allow non-dairy products to be labeled as milk gives a false sense of what is being delivered. The FDA does not have specific regulations for plant-based beverages, thus leaving room for nutritional disparities, especially when consumers believe they are getting the same nutrients that dairy milk provides.<sup>7</sup> For this reason, any milk alternative product that does not come from a mammal should not be allowed to have the label of "milk" (e.g., "almond milk" or "soy milk").

#### *A. Roadmap*

This Note takes the overall position that plant-based alternatives to milk are nutritionally inferior to cow's milk, and thus should be restricted from using the word "milk" on labels.

Section II of this Note provides some background information on FDA labeling regulations, as well as the dictionary and legal definitions of the word milk. It also includes a discussion of recent trends that have given rise to the increased interest in plant-based beverages.

Section III of this Note explores the differences in nutritional value between cow's milk and its various plant alternatives. For purposes of this Note, the scope of plant-based beverages was limited to almond, soy, rice, coconut, and oat varieties, as they tend to be the most popular among consumers. Then there is a discussion of the key nutrients in milk and how plant-based alternatives compare, followed by a determination of what the "best" and "worst" plant-based beverages are if used to replace milk. Then a brief overview of the unique health

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4. *Id.*

5. See Luca Leone, *Nomen Est Omen?: On the Legal Identity of Dairy Alternatives in the USA*, 14 EUR. FOOD & FEED L. REV. 436 (2019).

6. *Id.* at 443.

7. Press Release, Food & Drug Admin., Statement from FDA Commissioner Scott Gottlieb, M.D., on Modernizing Standards of Identity and the Use of Dairy Names for Plant-Based Substitutes (Sept. 27, 2018), <https://www.fda.gov/news-events/press-announcements/statement-fda-commissioner-scott-gottlieb-md-modernizing-standards-identity-and-use-dairy-names> [<https://perma.cc/C5JN-VQEG>].

benefits of milk is given.

Section IV of this Note asserts that Indiana should adopt legislation similar to the Truth in Labeling Act, that would prevent cow milk alternatives from being labeled as “milk.” It goes through various pieces of legislation that have been introduced and/or passed in various states, as well as a discussion of the DAIRY PRIDE Act that was introduced to Congress. This section concludes with an assessment of why it is important that Indiana take steps towards passing legislation similar to the Truth in Labeling Act.

Finally, Section V of this Note addresses specific recommendations of alternatives Indiana can adopt rather than using “milk” on plant-based product labels. It starts with a look at actions taken in Canada and Europe that Indiana and other states could also adopt. This is followed by a series of scenarios and recommendations of creative labeling techniques that do not involve using “milk” in labeling plant-based beverages.

## II. BACKGROUND INFORMATION

### *A. A Brief History of Food Labeling*

The very beginning of labeling transparency began with the 1906 Pure Food and Drug Act, which stated that a food’s label cannot be false or misleading in any way.<sup>8</sup> The Act also prohibits the interstate transport of food and drug products that may have false or misleading information on the label.<sup>9</sup>

Next came the Federal Food, Drug, and Cosmetic Act of 1938 (“FDCA”), which set forth certain requirements for the quality and identity standards in foods, including milk and other dairy products.<sup>10</sup> The FDCA also set limits on how a product could be advertised.<sup>11</sup> Section 401 of the FDCA adopted the requirement of standards of identity for numerous foods, including dairy products like milk.<sup>12</sup> Plant-based alternatives to milk, on the other hand, are not required to meet a standard of identity set out by the FDCA.<sup>13</sup> Section 401 requires that when a food does not have a standard of identity, the label must disclose its common or usual name and its ingredients, if it contains more than one.<sup>14</sup> For instance, a product containing both shrimp and cocktail sauce would appropriately be labeled as “shrimp cocktail” rather than just “cocktail” or even “seafood cocktail.”<sup>15</sup>

The FDCA also sets out guidelines for when a food shall be deemed as misbranded. A food is misbranded if its labeling is false or misleading in any

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8. Pure Food and Drugs Act of 1906, 59 Cong. Ch. 3915, 34 Stat. 768 (1906).

9. *Id.*

10. Federal Food, Drug, and Cosmetic Act of 1938 § 401, 21 U.S.C. § 341 (1938).

11. *Id.*

12. Leone, *supra* note 5, at 438.

13. *See* Federal Food, Drug, and Cosmetic Act of 1938 § 401.

14. Leone, *supra* note 5, at 438.

15. *See* 21 C.F.R. § 102.54 (2021).

way; it is sold under the name of another food; or it imitates another food, unless the label contains the word “imitation” and then immediately thereafter the name of the food it is imitating, such as “imitation crab.”<sup>16</sup> A food is considered an imitation of another food when “it is a substitute for and resembles another food but is nutritionally inferior to that food.”<sup>17</sup> However, a food does not fall into this category so long as it is not nutritionally inferior and its label has a common name or appropriate descriptive term that is not false and/or misleading.<sup>18</sup> A food is considered nutritionally inferior if it has “any reduction in content of an essential nutrient that is present in a measurable amount, but does not include a reduction in the caloric or fat content.”<sup>19</sup>

A common name of a food includes an indication of the presence or absence of key or characterizing ingredients, specifically when the presence or absence of that component has a bearing on the price or overall consumer acceptance of the product.<sup>20</sup> The common name is also required when the label or appearance of a food product has the potential to mislead or create a false impression that a particular ingredient is present in the food when it is in fact not, which could result in the misperception of what the product is to the average consumer.<sup>21</sup>

The FDCA provided a framework for food labelling regulations of all food that is manufactured, distributed, and sold in the United States.<sup>22</sup> The regulations required the statement of identity to provide the names of foods, requiring them to be truthful and otherwise not misleading.<sup>23</sup> This was the first time Congress established the meaning of “imitation” labeling for substitute food products, and mandated how the labeling of such indication must be carried out in a uniform size and prominence.<sup>24</sup>

### *B. Defining Milk*

The Merriam-Webster dictionary defines milk as “a fluid secreted by the mammary glands of females for the nourishment of their young.”<sup>25</sup> Furthermore, the legal definition of milk, as set out in the FDA regulations, is “the lacteal secretion, practically free from colostrum, obtained by the complete milking of one or more healthy cows.”<sup>26</sup> This definition also includes goat, sheep, and water buffalo as milk-producing animals when the FDA defines “milk products,” and

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16. Federal Food, Drug, and Cosmetic Act of 1938 § 403, 21 U.S.C. § 343.

17. 21 C.F.R. § 101.3 (2021).

18. *Id.*

19. *Id.*

20. 21 C.F.R. § 102.5 (2021).

21. *Id.*

22. Leone, *supra* note 5, at 438.

23. *Id.*

24. *Id.*

25. *Milk*, MERRIAM-WEBSTER, <https://www.merriam-webster.com/dictionary/milk> [<https://perma.cc/RMQ2-56L6>] (last visited Feb. 11, 2021).

26. 21 C.F.R. § 131.110 (2021).

is thus incorporated in the definition of “milk” by reference.<sup>27</sup> In both definitions, milk is produced by a mammal, most commonly a cow, and is an important part of the human diet. Dictionary definitions of plant-based alternatives to milk are often some variation of “colloidal suspensions or emulsions including dissolved and disintegrated vegetable material” that are “traditionally prepared by milling different raw material in suspension and then by filtering it to remove bigger particles.”<sup>28</sup>

The FDA definition of milk creates a specific standard of identity, setting out specific guidelines for what can and cannot be sold as “milk.”<sup>29</sup> These guidelines include specifications of fat content (differentiating between low fat milk, skim milk, cream, etc.), the process of fermentation (cultured or acidified), and the allowed modifications to the chemical and physical characteristics of milk.<sup>30</sup> Plant-based beverages do not meet these specifications for products that can be called milk, nor do they have their own standard of identity.<sup>31</sup>

### C. Trends in Milk Consumption

In the 1970s, the average American drank around thirty gallons of milk a year, which has since declined to around eighteen gallons per year, nearly half the consumption it once was.<sup>32</sup> This decline in milk consumption and sales matched with a rise in plant-based alternatives, especially within the past seven or so years.<sup>33</sup> In fact, as recently as 2008, alternative drinks to milk were largely made from soy, and were mainly consumed by those who were lactose intolerant or had a milk allergy.<sup>34</sup> A boost in the numbers of people straying away from dairy came between 2009 and 2014, around the same time that major social media platforms began to take off.<sup>35</sup> Instagram feeds quickly began to be filled with pictures of morning lattes and post-workout smoothies. Access to numerous “get skinny

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27. Marina E. Moreno & Jonathan Berman, *Can Nondairy Beverages Be Called Milk?*, 15 ABA SCITECH L. 24, 26 (2019).

28. Elvira Verduci et al., *Cow’s Milk Substitutes for Children: Nutritional Aspects of Milk from Different Mammalian Species, Special Formula and Plant-Based Beverages*, 11 NUTRIENTS 1, 11 (2019).

29. See 21 C.F.R. § 131.110 (2021).

30. See Moreno & Berman, *supra* note 27.

31. See *id.*

32. Nellie Bowles, *Got Milk? Or Was That Really a Plant Beverage?*, N.Y. TIMES (Aug. 31, 2018), <https://www.nytimes.com/2018/08/31/business/milk-nut-juice-plant-beverage-label.html> [<https://perma.cc/28L4-T7ZG>].

33. Lauren Sipple, *What’s in a Name?: The Use of Dairy Product Names in Labeling of Plant-Based Alternatives*, SCI. MEETS FOOD (Dec. 13, 2018), <https://sciencemeetsfood.org/whats-name-use-dairy-product-names-labeling-plant-based-alternatives/> [<https://perma.cc/C4LS-QGAP>].

34. Franklin-Wallis, *supra* note 1.

35. Bee Wilson, *Why We Fell for Clean Eating*, GUARDIAN (Aug. 11, 2017), <https://www.theguardian.com/lifeandstyle/2017/aug/11/why-we-fell-for-clean-eating> [<https://perma.cc/95LE-P2R2>].

quick” methods promoted by celebrities were available at the touch of a button, and “hashtag veganism” began trending on Twitter. People soon began to crave new ways of following these newly sparked health crazes.<sup>36</sup> One of the biggest targets of this social media madness: milk.<sup>37</sup>

Around this same time, health documentaries started gaining attention, which again put the spotlight on things like fast food companies and the meat and dairy industries.<sup>38</sup> This brought an increase in concern of the conditions dairy cows were working in, as well as whether pesticides or antibiotics were in the food the cows were fed.<sup>39</sup> When considered together with the negative media portrayal of the environmental impacts that the meat and dairy industries were rumored to have, consumers became increasingly wary of the milk they had been drinking for their entire lives.<sup>40</sup> The public quickly started believing that beverages derived from nuts and seeds were nutritionally and ethically superior to cow’s milk, and thus a critical hit was taken by dairy farmers across the nation.<sup>41</sup>

### III. PLANT-BASED BEVERAGES ARE NUTRITIONALLY INFERIOR TO MILK

Perhaps the biggest difference between cow milk and its plant-based alternatives are their nutritional composition. Many alternatives fall short of meeting the same needs that cow’s milk fulfills, especially in growing infants and children.<sup>42</sup> The associated lack of information and education in this disparity can have detrimental effects on not only nutrition of the population, but also on overall health and food security.<sup>43</sup> For instance, inadequate substitution of plant alternatives for cow’s milk in the diet can lead to major nutritional gaps for the entire population, but most importantly in children.<sup>44</sup> Consumers who lack knowledge of what they are choosing to incorporate in their diet puts them at risk of health consequences caused by under-consumption of key nutrients found in milk, such as calcium and vitamin D, both of which are essential for bone health and preventing bone fractures.<sup>45</sup>

Dairy is one of the key food groups on any food pyramid, which traditionally includes fat-free and low-fat milk, yogurt, cheese, and even fortified soy beverages.<sup>46</sup> The FDA guidelines state that fortified<sup>47</sup> soy is included because it

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36. *See id.*

37. *Id.*

38. *Id.*

39. Franklin-Wallis, *supra* note 1.

40. *Id.*

41. *See* Verduci et al., *supra* note 28.

42. *Id.* at 2.

43. *Id.*

44. *Id.* at 11.

45. Press Release, Food & Drug Admin., *supra* note 7.

46. Use of the Names of Dairy Foods in the Labeling of Plant-Based Products, 83 Fed. Reg. 49,103, 49,107 (Sept. 25, 2018).

47. *See* Johanna Dwyer et al., *Fortification and Health: Challenges and Opportunities*, 6

is the closest alternative to low-fat and non-fat milks, so long as it has been fortified with, at minimum, calcium, vitamin A, and vitamin D.<sup>48</sup> Other plant-based alternatives to milk are explicitly excluded from the dairy food group because their overall composition is not similar to milk.<sup>49</sup> The 2015-2020 Dietary Guidelines for Americans also identified that Americans as a whole are not meeting the recommended intake of milk and other dairy products.<sup>50</sup> This led to the United States Department of Agriculture (“USDA”) recommending an increased intake of low-fat and fat-free dairy foods in nutrient-dense forms, like milk, as a method of increasing calcium, vitamin D, and potassium levels.<sup>51</sup>

The reality is that adults in the United States have misinformed perceptions on the health status of milk, and how the alternatives they are using stack up against it.<sup>52</sup> A study conducted by the National Dairy Council (“NDC”) found that the majority of adults surveyed incorrectly believed that almond, soy, and coconut alternatives to milk had the same, if not greater, levels of protein and other key nutrients that milk has.<sup>53</sup>

One of the major reasons that adults make the switch from cow’s milk to an alternative is for perceived health benefits.<sup>54</sup> A closer look at the nutrient breakdown of milk and some of its most popular alternatives illustrates that many of the non-dairy choices are actually nutritionally inferior.

#### *A. Cow’s Milk*

Growing up, children are told to drink their milk in order to make their teeth and bones nice and strong. Cow’s milk has a long history of being consumed in many parts of the world, mostly for its ideal balance of three macronutrients necessary in a well-rounded diet: fats, carbohydrates, and proteins.<sup>55</sup> In addition, the nutrients found in cow’s milk are associated with prevention of hypertension, cardiovascular disease, obesity, osteoporosis, and even cancer.<sup>56</sup>

#### *B. Plant-Based Milk Alternatives*

The following is a brief overview of the most popular types of plant-based alternatives to milk: almond, soy, rice, coconut, and oat.

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ADVANCES IN NUTRITION 124 (2015) (explaining the process of using fortification as a way of adding nutrients to foods and beverages).

48. Use of the Names of Dairy Foods in the Labeling of Plant-Based Products, 83 Fed. Reg. at 49,103, 49,107.

49. *Id.*

50. *Id.*

51. Sipple, *supra* note 33.

52. *See id.*

53. *Id.*

54. *Id.*

55. See Sai Kranthi Vanga & Vijaya Raghavan, *How Well Do Plant Based Alternatives Fare Nutritionally Compared to Cow’s Milk?*, 50 J. FOOD SCI. & TECH. 10 (2018).

56. Sipple, *supra* note 33.

### 1. Almond-Based Milk Alternatives

One of the most popular alternatives to milk is its almond-derived alternative.<sup>57</sup> It was mainly introduced and marketed towards people seeking an alternative to milk due to an allergy or lactose intolerance.<sup>58</sup> It is also seen as desirable for its cholesterol-lowering and potential prebiotic benefits.<sup>59</sup>

Almond-based beverages are a colloidal dispersion that is made by mixing water with powdered or pasted almonds.<sup>60</sup> The resulting liquid is homogenized using high pressures and then pasteurized to increase shelf stability.<sup>61</sup> The homogenization and heat treatment processes that almond-based beverages go through can result in deviations of various properties of the liquid, including the nutrient profile.<sup>62</sup>

Almonds have a high concentration of monounsaturated fatty acids (“MUFAs”) and polyunsaturated fatty acids (“PUFAs”), which are considered helpful in losing and maintaining weight.<sup>63</sup> Almonds are also high in protein, fiber, vitamin E (an antioxidant), and manganese, and generally rich in calcium, potassium, magnesium, iron, selenium, copper, and zinc.<sup>64</sup>

Almond-based beverages hover around 35 calories per serving, each containing about 3 grams of carbohydrates and 5 grams of protein.<sup>65</sup> Median ranges of calcium, an essential nutrient in milk, fall right around 330 milligrams, mainly because of calcium being added post-processing.<sup>66</sup> Almond beverages also have notable amounts of fat-soluble vitamins E and A.<sup>67</sup> Almond-based beverages must be fortified with critical micronutrients like calcium and vitamin B-12 in order to meet the requirements of growing children.<sup>68</sup>

### 2. Soy-Based Milk Alternatives

As early as the 14th century, people in China have been using soybeans to

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57. See Santosh Dhakal et al., *Effect of High Pressure Processing on the Immunoreactivity of Almond Milk*, 62 FOOD RSCH. INT’L 215 (2014).

58. Vanga & Raghavan, *supra* note 55, at 12.

59. See Sarita Singhal et al., *A Comparison of the Nutritional Value of Cow’s Milk and Nondairy Beverages*, 64 J. PEDIATRIC GASTROENTEROLOGY & NUTRITION 799 (2017).

60. Vanga & Raghavan, *supra* note 55, at 12.

61. See Neus Bernat et al., *Development of a Non-Dairy Probiotic Fermented Product Based on Almond Milk and Inulin*, 21 FOOD SCI. & TECH. INT’L 440 (2014).

62. See Neus Bernat et al., *Effect of High Pressure Homogenization and Heat Treatment on Physical Properties and Stability of Almond and Hazelnut Milks*, 62 LWT – FOOD SCI. & TECH. 488 (2015).

63. Vanga & Raghavan, *supra* note 55, at 12.

64. Verduci et al., *supra* note 28, at 12.

65. Vanga & Raghavan, *supra* note 55, at 13.

66. *Id.*

67. *Id.*

68. Verduci et al., *supra* note 28, at 12.

produce a liquid, mostly as part of the tofu-making process.<sup>69</sup> Milk alternatives derived from soybeans were among the first to be developed as a way of providing nutrients to populations where milk supply was inadequate.<sup>70</sup>

Soy-based beverages average about 95 calories per serving, with about 4 grams of carbohydrates, 8 grams of protein, and 4.5 grams of fat in each.<sup>71</sup> Soybeans are very rich in relatively high-quality protein, and have plenty of isoflavones, which are known for having properties that protect against cancer, cardiovascular disease, and osteoporosis.<sup>72</sup> Soy is also a good source of trans-fats, MUFAs, and PUFAs, and its high levels of phytosterols have cholesterol-lowering properties.<sup>73</sup>

One major drawback of anything derived from soy is the characteristic “beany” flavor that it has.<sup>74</sup> Another concern is the number of anti-nutritional factors present in soybeans, despite its handful of heart-protective qualities.<sup>75</sup> It also does not avoid the allergy issue, as there are people with soy allergies as well.<sup>76</sup> Soy beverages also tend to have deficits in calcium and vitamin B-12 levels, so these micronutrients are often supplemented into the drink.<sup>77</sup>

### 3. Rice-Based Milk Alternatives

Rice-based beverages are made from mixing milled brown rice with water.<sup>78</sup> Rice is very rich in carbohydrates, and rice-based beverages are no different.<sup>79</sup> The processing of the rice and water mixture leads to the breakdown of carbohydrates into sugars, leading to a characteristically sweet taste, but significant amounts of sugar that lead to malnutrition with regular consumption.<sup>80</sup>

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69. Franklin-Wallis, *supra* note 1.

70. See Verduci et al., *supra* note 28.

71. Vanga & Raghavan, *supra* note 55, at 14.

72. See Bjarne Jacobsen et al., *Does High Soy Milk Intake Reduce Prostate Cancer Incidence? The Adventist Health Study (United States)*, 9 *CANCER CAUSES & CONTROL* 553 (1998); see also Adetayo Omoni & Rotimi Aluko, *Soybean Foods and Their Benefits: Potential Mechanisms of Action*, 63 *NUTRITION REV.* 272 (2005); Verduci et al., *supra* note 28.

73. See Verduci et al., *supra* note 28.

74. Vanga & Raghavan, *supra* note 55, at 14.

75. See Brinda Harish Vagadia et al., *Effects of Thermal and Electric Fields on Soybean Trypsin Inhibitor Protein: A Molecular Modelling Study*, 35 *INNOVATIVE FOOD SCI. & EMERGING TECH.* 9 (2016); see also Shaohong Yuan et al., *Elimination of Trypsin Inhibitor Activity and Beany Flavor in Soy Milk by Consecutive Blanching and Ultrahigh-Temperature (UHT) Processing*, 56 *J. AGRIC. & FOOD CHEMISTRY* 7957 (2008); Verduci et al., *supra* note 28.

76. Verduci et al., *supra* note 28, at 12.

77. *Id.* at 11.

78. Vanga & Raghavan, *supra* note 55, at 15.

79. See *id.*

80. See Kenneth Katz et al., *Rice Nightmare: Kwashiorkor in 2 Philadelphia-Area Infants Fed Rice Dream Beverage*, 52 *J. AM. ACAD. DERMATOLOGY* S69 (2005); see also Guy Massa et al., *Protein Malnutrition Due to Replacement of Milk by Rice Drink*, 160 *EUR. J. PEDIATRICS* 382

When given to children, parents generally are not aware of the fundamental differences in nutrition between rice beverages and cow's milk.<sup>81</sup> Kwashiorkor, a form of protein-energy malnutrition, was observed in infants that were on a rice-based diet, illustrating the risk of malnutrition in consuming solely rice-based beverages.<sup>82</sup> High levels of arsenic have also been reported in rice, and thus its derivatives, which can be extremely dangerous to humans, even causing cancer in some cases.<sup>83</sup>

Traces of calcium, magnesium, iron, and vitamins A and E are present in rice-based beverages but would still need to be fortified to increase many micronutrient levels.<sup>84</sup> They generally go unfortified though, and thus lack crucial minerals and vitamins like adequate levels of calcium and vitamin B-12.<sup>85</sup> Rice beverages average about 26 grams of carbohydrates per serving, while the protein and fat content is almost non-existent.<sup>86</sup>

#### 4. Coconut-Based Milk Alternatives

Coconut is a staple in certain cultural cuisines, especially in Southeast Asia, and is used for both cooking and drinking, and the liquid component is produced from grating the white meat of the coconut.<sup>87</sup> Various research studies have found conclusive evidence that consumption of coconut can increase high-density lipoprotein ("HDL") levels, which help in reducing the harmful low-density lipoprotein ("LDL") levels.<sup>88</sup> This is because coconut contains lauric acid, which raises levels of HDL cholesterol, which in turn helps lower LDL cholesterol levels in the blood stream.<sup>89</sup> In terms of benefits, coconut is also rich in potassium, magnesium, iron, and zinc, as well as moderate values of vitamins E

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(2001).

81. Verduci et al., *supra* note 28, at 12.

82. Vanga & Raghavan, *supra* note 55, at 15.

83. See Iva Hojsak et al., *Arsenic in Rice: A Cause for Concern*, 60 J. PEDIATRIC GASTROENTEROLOGY & NUTRITION 142 (2015).

84. Verduci et al., *supra* note 28, at 12.

85. See Winston Craig, *Health Effects of Vegan Diets*, 89 AM. J. CLINICAL NUTRITION 1627S (2009); see also Virginia Messina & Ann Reed Mangels, *Considerations in Planning Vegan Diets: Children*, J. AM. DIETETIC ASS'N 661 (2001).

86. Vanga & Raghavan, *supra* note 55, at 16.

87. See Swati Sethi et al., *Plant-Based Milk Alternatives an Emerging Segment of Functional Beverages: A Review*, 53 J. FOOD SCI. & TECH. 3408 (2016).

88. See Ruvan Ekanayak et al., *Impact of a Traditional Dietary Supplement with Coconut Milk and Soya Milk on the Lipid Profile in Normal Free Living Subjects*, 2013 J. NUTRITION & METABOLISM 1 (2013); see also Ronald Mensink et al., *Effects of Dietary Fatty Acids and Carbohydrates on the Ratio of Serum Total to HDL Cholesterol and on Serum Lipids and Apolipoproteins: A Meta-Analysis of 60 Controlled Trials*, 77 AM. J. CLINICAL NUTRITION 1146 (2003).

89. See Ekanayak et al., *supra* note 88.

and C.<sup>90</sup>

Long-term storage of coconut-based beverages can be a challenge, as most varieties come in a can.<sup>91</sup> Part of the canning process requires a thermal treatment to ensure that it is shelf-stable for a certain period of time.<sup>92</sup> This treatment process causes the concentration of short and medium chain fatty acids and aldehydes to increase over time due to lipid oxidation.<sup>93</sup> That basically means that the longer the coconut-based beverage is stored, the lower the nutritional value becomes.<sup>94</sup>

Coconut-based beverages tend to hover around 45 calories per serving, however the majority of these calories come from saturated fats, which are often associated with cardiovascular issues.<sup>95</sup> It also contains almost no protein and negligible amounts of carbohydrates, especially in comparison to its high saturated fat content.<sup>96</sup>

### 5. Oat-Based Milk Alternatives

One of the newest, and perhaps trendiest, alternatives to milk as of late comes from oats.<sup>97</sup> Oat drinks have low amounts of fat and protein, but a varied amino acid profile.<sup>98</sup> Fiber and phytochemicals, like antioxidants and polyphenols, contribute to the relatively high nutritional value.<sup>99</sup> The soluble fiber in oats give it the ability to increase solution viscosity, which delays gastric emptying time.<sup>100</sup> This increases gastrointestinal transit time, and thus reduces blood glucose levels and LDL cholesterol in the bloodstream.<sup>101</sup>

However, oats contain significant levels of phytic acid, an antinutrient that interferes with the uptake of certain other nutrients.<sup>102</sup> It also lacks calcium, which requires oat-based beverages to be fortified in order to even attempt to rival the nutritional composition of milk.<sup>103</sup>

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90. Verduci et al., *supra* note 28, at 12.

91. See Patcharaporn Tinchai et al., *Changes in the Profile of Volatiles of Canned Coconut Milk During Storage*, 80 J. FOOD SCI. C49 (2014).

92. *Id.*

93. *Id.*

94. *Id.*

95. Vanga & Raghavan, *supra* note 55, at 17.

96. *Id.*

97. See, e.g., *Wow No Cow*, OATLY (2021), <https://us.oatly.com/pages/oatly-tv#https://cdn.shopify.com/s/files/1/0248/3883/2225/files/wnc-sb-cut.mp4> [<https://perma.cc/ZV28-22N6>]. This commercial was originally aired during the 2021 Super Bowl. *Id.*

98. Verduci et al., *supra* note 28, at 13.

99. *Id.*

100. See Sethi et al., *supra* note 87.

101. *Id.*

102. Verduci et al., *supra* note 28, at 13.

103. *Id.*

*C. Why the Differences in Nutrition Are Significant*

The major issue of labeling plant-based beverages as “milk” is not necessarily that consumers are unaware or confused as to where their drink came from.<sup>104</sup> The issue lies in the connotations that the word “milk” has, especially when it comes to nutrition.<sup>105</sup> Many consumers can look at a label reading “almond milk” and realize that the liquid in the carton is derived from almonds.<sup>106</sup> Significantly fewer consumers can look at the same label and recognize that the nutrient content of the liquid in the carton is different than what they would be getting from cow’s milk.<sup>107</sup> This general lack of information regarding the nutritional differences between milk and its alternatives is why labeling is so important.<sup>108</sup> More specific labeling can help consumers realize that plant-based beverages are not a one-to-one substitute for milk.<sup>109</sup>

According to a study published by the National Dairy Council, 53% of exclusive dairy milk buyers cite nutrition as important to their purchase decision; 62% of exclusive plant-based milk buyers cite it as necessary.<sup>110</sup> Exclusive dairy milk buyers associate nutrition and health overwhelmingly with dairy milk.<sup>111</sup> In contrast, exclusive plant-based milk buyers perceive plant-based milk as significantly stronger linked to nutrition, health, vitamins, minerals, and protein.<sup>112</sup> The majority of consumers perceive almond, soy, and coconut milk as having the same or more protein and key nutrients as dairy milk.<sup>113</sup> The top reason consumers believe plant-based milk is labeled as “milk” is because the products are comparable on a nutrition front, with more than half citing this as a reason.<sup>114</sup>

Current regulations provide that a product will not be considered an imitation so long as it is not nutritionally inferior and bears an appropriately descriptive

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104. Umair Irfan, “Fake Milk”: *Why the Dairy Industry is Boiling Over Plant-Based Milks*, VOX (Dec. 21, 2018, 3:25 PM), <https://www.vox.com/2018/8/31/17760738/almond-milk-dairy-soy-oat-labeling-fda> [<https://perma.cc/U5AM-H6SF>].

105. See Sam Sabin, *Got Milk? For 46% of U.S. Adults in Poll, Only if It’s from an Animal*, MORNING CONSULT (July 25, 2018, 12:01 AM), <https://morningconsult.com/2018/07/25/got-milk-for-46-us-adults-poll-only-from-animal/> [<https://perma.cc/2SD3-BE2M>].

106. See Irfan, *supra* note 104.

107. *Id.*

108. *Id.*

109. *Id.*

110. *Consumer Perceptions: Dairy Milk and Plant-Based Milk Alternatives*, NAT’L DAIRY COUNCIL (Oct. 29, 2018, 7:17 PM), <https://www.usdairy.com/getmedia/1d205edf-d76e-4440-a47d-5fe857644ccc/dairy%20and%20plant%20one-page%20summary%2010-28-2018%20final.pdf.pdf.aspx> [<https://perma.cc/LE8H-9D65>].

111. *Id.*

112. *Id.*

113. *Id.*

114. *Id.*

common or usual name.<sup>115</sup> Therefore, plant-based milk alternatives need to contain the same levels of protein, vitamin D, vitamin A, and all other nutrients present in cow's milk at a level of two percent or more.<sup>116</sup> Otherwise, the alternatives are subject to being considered a milk imitation.<sup>117</sup>

### *1. Balance of Macronutrients*

In order to act as an adequate alternative to milk, a beverage should have a similar distribution of carbohydrates, fats, protein, and similar calorie content as milk.<sup>118</sup> A serving of milk is about 64 calories and about 3 to 4.5 grams each of carbohydrates, fats, and protein.<sup>119</sup> Milk is the most balanced option, whereas almond, rice, and coconut alternatives do not come close to being an adequate replacement in this respect.<sup>120</sup> Almonds and coconuts get most of their energy composition from fat, and rice gets it almost completely from carbohydrates.<sup>121</sup> Coconuts are also extremely high in saturated fats, commonly associated with cardiovascular disease.<sup>122</sup> Rice is a very poor source of protein and fat, as starch makes up almost all of it.<sup>123</sup>

Almonds and soybeans have high concentrations of MUFAs and PUFAs, especially in comparison to their saturated fat content.<sup>124</sup> Both MUFAs and PUFAs also lead to a reduced risk of cardiovascular issues and cancer formation.<sup>125</sup> The health benefits, together with the relative balance of energy, make almond and soy alternatives to milk the two best options in terms of the three macronutrients.

### *2, Calcium*

Beyond energy content, milk is an important source of calcium, which is

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115. Sam Danley, *IFT20: Plant-Based Labeling Debate Continues*, FOOD BUS. NEWS (July 20, 2020, 7:57 PM), <https://www.foodbusinessnews.net/articles/16451-ift20-plant-based-labeling-debate-continues> [<https://perma.cc/47ZE-8YYZ>].

116. *Id.*

117. *Id.*

118. Vanga & Raghavan, *supra* note 55, at 18.

119. *Id.* at 17.

120. *Id.* at 18.

121. *Id.*

122. See Patty Siri-Tarino et al., *Meta-Analysis of Prospective Cohort Studies Evaluating the Association of Saturated Fat with Cardiovascular Disease*, 91 AM. J. CLINICAL NUTRITION 535, 535 (2010).

123. Vanga & Raghavan, *supra* note 55, at 18.

124. *Id.*

125. See Penny Kris-Etherton, *Monounsaturated Fatty Acids and Risk of Cardiovascular Disease*, 100 CIRCULATION 1253 (1999); see also Haim Tapiero et al., *Polunsaturated Fatty Acids (PUFA) and Eicosanoids in Human Health and Pathologies*, 56 BIOMEDICINE & PHARMACOTHERAPY 215 (2002).

required by the human body to maintain bone health throughout life, as well as bone formation and development during childhood and adolescence.<sup>126</sup> At face value, it may appear that almond and soy alternatives have greater calcium content than milk.<sup>127</sup> However, the correct way to analyze amounts of calcium is by the weight of the nutrient per calorie, commonly known as nutrient density.<sup>128</sup> When this is taken into consideration, milk offers 1.9 milligrams calcium per calorie, which is much higher than almonds (0.46 milligrams calcium per calorie) and soybeans (0.62 milligrams calcium per calorie).<sup>129</sup> Calcium is often added to most varieties of plant-based beverages to directly mimic the calcium levels in cow's milk, with the levels varying widely.<sup>130</sup> While it is true that most alternatives to milk are fortified with calcium, the bioavailability of that calcium differs depending on the form it is present in.<sup>131</sup> For instance, calcium in cow's milk is "colloidal as caseinate-phosphate complex and is readily released during digestion."<sup>132</sup> Calcium in fortified beverages are often in the form of calcium carbonate and tricalcium phosphate, which have varying levels of availability for absorption when compared with calcium in cow's milk.<sup>133</sup>

### 3. Carbohydrates

The significantly lower number of calories present in plant-based alternatives to milk is one of the driving forces behind their increase in demand.<sup>134</sup> The main reason for the higher number of calories in cow's milk is the sugar content, which is generally lower among plant alternatives, with the exception of rice-based products.<sup>135</sup> Coconut tends to have the lowest number of carbohydrates, followed by almond, soy, then cow's milk, and with rice coming out at the highest.<sup>136</sup>

Interestingly, the different plant-based beverages have different effects on the glycemic index based on their carbohydrate content.<sup>137</sup> Rice and coconut drinks

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126. See Shanthi Bowman, *Beverage Choices of Young Females: Changes and Impact on Nutrient Intakes*, 102 J. ACAD. NUTRITION & DIETETICS 1234 (2002); see also Rivka Black Sandler et al., *Postmenopausal Bone Density and Milk Consumption in Childhood and Adolescence*, 42 AM. J. CLINICAL NUTRITION 270 (1985).

127. Vanga & Raghavan, *supra* note 55, at 18.

128. See Harold Newmark, *Nutrient Density: An Important and Useful Tool for Laboratory Animal Studies*, 8 CARCINOGENESIS 871 (1987).

129. Vanga & Raghavan, *supra* note 55, at 18.

130. *Id.*

131. See Sipple, *supra* note 33.

132. *Id.*

133. *Id.*

134. Vanga & Raghavan, *supra* note 55, at 18.

135. *Id.*

136. *Id.*

137. See Stephanie Jeske et al., *Evaluation of Physicochemical and Glycaemic Properties of Commercial Plant-Based Milk Substitutes*, 72 PLANT FOODS HUM. NUTRITION 26 (2017).

have the highest levels due to high glucose contents.<sup>138</sup> Oat drinks were next due to beta-glucans, followed by relatively low levels for soy and almond drink.<sup>139</sup> Milk would likely fall higher on the glycemic index because it contains the sugars lactose and galactose.<sup>140</sup>

#### 4. Cholesterol and Fats

One downfall that milk has is cholesterol.<sup>141</sup> Since it comes from an animal, milk naturally has cholesterol.<sup>142</sup> Plant-based beverages do not have any cholesterol, which is one advantage that they do have over milk, and thus is another reason for their increased demand.<sup>143</sup>

Milk also has the highest fat content, with about two-thirds coming from saturated fat, and the other third coming from MUFAs.<sup>144</sup> Saturated fat is the lowest in almond beverages, followed by rice, soy, and finally coconut, with almost all of its fat coming from saturated fats.<sup>145</sup> Almond-based beverages have no saturated fats and high quantities of unsaturated fatty acids, making them seem like a better alternative than the other plant-based beverages on this criterion.<sup>146</sup>

#### 5. Protein

One of the most significant nutrients coming from milk is protein.<sup>147</sup> Soy-based beverages are the only alternative that comes close to comparing, with almost the same protein levels being provided.<sup>148</sup> Almond beverages also provide a small amount of protein, but not enough to be comparable to milk.<sup>149</sup> Beverages made from quinoa, hemp, and oats are notable for having greater than 1% of energy from protein, but overall those values are not impressive.<sup>150</sup>

Another issue with proteins coming from plant sources is that they are generally of lower nutritional quality than animal-derived counterparts.<sup>151</sup> This is because plant proteins have a limited range of amino acids, such as lysine in

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138. *Id.*

139. *Id.*

140. Verduci et al., *supra* note 28, at 13.

141. *See* Vanga & Raghavan, *supra* note 55, at 18.

142. *See* Robert Jensen et al., *The Composition of Milk Fat*, 74 J. DAIRY SCI. 3228 (1991).

143. Vanga & Raghavan, *supra* note 55, at 18.

144. *Id.*

145. *Id.*

146. *Id.*

147. *Id.*

148. *Id.*

149. *Id.*

150. Verduci et al., *supra* note 28, at 13.

151. *See* Outi Elina Makinen et al., *Foods for Special Dietary Needs: Non-Dairy Plant-Based Milk Substitutes and Fermented Dairy-Type Products*, 56 CRITICAL REV. FOOD SCI. & NUTRITION 339 (2016).

cereal grains and methionine in legumes.<sup>152</sup> Amino acids, which are the “building blocks” of proteins, are fragmented in plant-based products, meaning that they do not make up complete proteins.<sup>153</sup> When proteins are fragmented, the nutritional value is greatly diminished because the protein is harder for humans to digest.<sup>154</sup> Cow’s milk is commonly used as a way to get readily available protein in the diet of many Americans.<sup>155</sup> This poses a problem when cow’s milk is replaced with one of its plant alternatives.<sup>156</sup> Even if a plant-based alternative is fortified with protein, the protein is of a lesser quality, and there is no way of differentiating that on a nutrition label.<sup>157</sup> To the average consumer, protein appears to be the same whether it comes from a fortified plant drink or from cow’s milk, even though that is not an accurate assumption.<sup>158</sup>

An argument against milk being a major source for protein in the human diet is that the proteins present in milk can sometimes trigger allergic reactions to milk and other dairy products.<sup>159</sup> While there is no way around this, it is also worth noting that allergies to proteins in soybeans is also common, as well as almond proteins.<sup>160</sup> It is unlikely that the same person is allergic to all three proteins, but this illustrates that no one beverage is immune from causing allergic reactions.<sup>161</sup>

#### 6. *Micronutrients and Fortification*

Minerals present in cow’s milk in significant quantities includes magnesium, phosphorous, and potassium.<sup>162</sup> Most of the milk alternatives contain comparable amounts of these minerals, with the exception that coconut-based beverages have no phosphorous, and both coconut and rice beverages have low levels of potassium.<sup>163</sup>

Since plant-based beverages are considerably lower in protein, vitamins B-12, B-2, D, and E also tend to be low.<sup>164</sup> This is why many plant-derived drinks are fortified with various vitamins and minerals that are commonly found in milk.<sup>165</sup>

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152. *Id.*

153. Danley, *supra* note 115.

154. *See* Makinen et al., *supra* note 151.

155. *See* Danley, *supra* note 115.

156. *Id.*

157. *Id.*

158. *Id.*

159. *See* Scott Sicherer, *Epidemiology of Food Allergy*, 127 J. ALLERGY & CLINICAL IMMUNOLOGY 594 (2011); *see also* Sai Kranthi Vanga et al., *Review of Conventional and Novel Food Processing Methods on Food Allergens*, 57 CRITICAL REV. FOOD SCI. & NUTRITION 2077 (2015).

160. *See* Sicherer, *supra* note 159; Vanga et. al., *supra* note 159.

161. Vanga & Raghavan, *supra* note 55, at 18.

162. *Id.*

163. *Id.*

164. Verduci et al., *supra* note 28, at 13.

165. *Id.*

Soy beverages are the only alternative that has somewhat similar levels of vitamins.<sup>166</sup> The vitamin content of other milks is not reported on their labels, which means that the vitamins are either not present, or are present in such small quantities that they are not able to be labeled.<sup>167</sup> Even when beverages are fortified with vitamins and minerals, the nutritional properties still differ quite considerably because nutrient bioavailability can depend on a wide range of factors, including the fortification process.<sup>168</sup>

The vast differences in nutritional value between milk and its alternatives illustrates the need for education on the composition of what consumers are purchasing and providing to their families. Many milk alternatives also rely heavily on the fortification process to add in key nutrients they naturally lack.<sup>169</sup> While this may seem like a good solution to the nutritional disparity issue, fortified nutrients may not be as bioavailable as naturally occurring nutrients, which means that they may not be absorbed at a full capacity in order for the body to use.<sup>170</sup> If the body is not getting these nutrients, it further contributes to the high risk of malnutrition when an individual relies solely on milk alternatives.<sup>171</sup> Combined with a lack of knowledge on how to better supplement and make up for this lost nutrition, many people may not be getting the appropriate amount of vitamins and minerals required on a daily basis for a healthy lifestyle.<sup>172</sup>

### 7. Children

A key demographic of milk drinkers is children.<sup>173</sup> If children are consistently drinking plant-based beverages in place of milk, they are not getting the appropriate nutrients they need to grow and develop at an appropriate rate.<sup>174</sup> Regular consumption of cow's milk has been associated with increased height in children, which is a factor taken into consideration when evaluating a child's nutritional status.<sup>175</sup> Regular consumption of plant-based beverages is generally associated with a lower childhood height, most likely attributable to a lower protein intake, since the quality of protein provided by plants is lower than that of mammals.<sup>176</sup> Another protein-related malnutrition disorder in children is Kwashiorkor, which can be life threatening, although is not commonly seen in

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166. Vanga & Raghavan, *supra* note 55, at 19.

167. *Id.*

168. See Sarita Singhal et al., *A Comparison of the Nutritional Value of Cow's Milk and Nondairy Beverages*, 64 J. PEDIATRIC GASTROENTEROLOGY & NUTRITION 799 (2017).

169. Verduci et al., *supra* note 28, at 13.

170. See Singhal et al., *supra* note 59.

171. See Makinen et al., *supra* note 151.

172. *Id.*

173. *Id.*

174. *Id.*

175. Sipple, *supra* note 33.

176. *Id.*

developed countries, like the United States.<sup>177</sup> However, cases have been reported in the United States in children who consume only plant-based beverages, most likely due to either lactose allergies, or simply lack of parent or guardian education on the nutritional importance of dairy products.<sup>178</sup>

#### 8. *The “Best” Plant-Based Alternative*

After analyzing the key nutrients in milk, and how the plant-based beverages compare, soy beverages come the closest nutritionally to comparing to cow’s milk.<sup>179</sup> However, the distinctive “beany” flavor of soy products, as well as the anti-nutrients present in soybeans are two major downfalls that may prompt consumers to turn towards almond beverages.<sup>180</sup>

Almonds provide a fairly balanced nutrient profile and have a much more neutral flavor.<sup>181</sup> Their nutrient density and overall number of calories are not as rich as cow’s milk, which creates the need to be extra careful to consume all of the essential nutrients if almond beverages are used to replace cow’s milk in the human diet.<sup>182</sup>

Rice and coconut derived beverages cannot be used as a nutritional equivalent to cow’s milk in the diet.<sup>183</sup> Both have limited nutrient diversity, are too concentrated in either carbohydrates or fats, and have almost no protein content.<sup>184</sup>

#### D. *Health Benefits of Cow’s Milk*

Milk and other dairy products are good sources of high-quality protein, which is important in weight loss and maintenance.<sup>185</sup> High-quality protein has a satiating effect which helps prevent over-consumption of calories and reduces body fat stores.<sup>186</sup> Protein from dairy is also a good source of essential amino acids for muscle protein synthesis which maintains the metabolically active

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177. *Id.*

178. *Id.*

179. Vanga & Raghavan, *supra* note 55, at 19.

180. *Id.*

181. *Id.*

182. *Id.*

183. *Id.*

184. *Id.* at 18.

185. Tanja Kongerslev Thorning et al., *Milk and Dairy Products: Good or Bad for Human Health? An Assessment of the Totality of Scientific Evidence*, 60 FOOD & NUTRITION RSCH. 1, 2 (2016).

186. See Jo-Anne Gilbert et al., *Effect of Proteins from Different Sources on Body Composition*, 21 NUTRITION, METABOLISM & CARDIOVASCULAR DISEASES B16 (2011); see also Line Bendtsen et al., *Effect of Dairy Proteins on Appetite, Energy Expenditure, Body Weight, and Composition: A Review of the Evidence from Controlled Clinical Trials*, 4 ADVANCES NUTRITION 418 (2013).

muscle mass during weight loss.<sup>187</sup> Dairy can facilitate weight loss and improve body composition by reducing body fat mass and preserving lean body mass.<sup>188</sup>

“Low-fat, calcium-rich dairy products are generally considered to lower blood pressure.”<sup>189</sup> There are also studies that show an inverse relationship between milk intake and both the chances of stroke and cardiovascular disease.<sup>190</sup>

Milk contains a number of nutrients that are required for building and maintaining strong bones and reducing osteoporosis and bone fractures in older age.<sup>191</sup> Protein, calcium, phosphorous, magnesium, manganese, zinc, vitamin D, and vitamin K are all necessary for maintaining healthy bones.<sup>192</sup> These vitamins and minerals, with the exception of vitamin D, are all naturally present in significant amounts in milk, and most milks are fortified with vitamin D.<sup>193</sup> The 2015-2020 Dietary Guidelines for Americans note the importance of calcium in building and protecting bones, mentioning that plant-based beverages typically contain inorganic chemical forms of calcium, which may increase cardiovascular risk and do little in the way of supporting bone health.<sup>194</sup>

Although studies are inconsistent, consumption of milk probably helps protect against colorectal cancer, bladder cancer, gastric cancer, and breast cancer.<sup>195</sup> These findings are quite robust in the area of milk consumption preventing colorectal cancer in women.<sup>196</sup>

Despite most of the plant-based beverages having lower saturated fat and cholesterol levels than cow’s milk, some have higher caloric content due to high contents of oils or added sugars that envy those of sugar-sweetened juices and sodas.<sup>197</sup> Such high levels of added sugar are linked to obesity, reduced insulin sensitivity, increased liver, muscle, and visceral fat content, increased blood pressure, and increased concentrations of triglycerides and cholesterol in the blood.<sup>198</sup> Overall, there is insufficient evidence to conclude that plant-based

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187. See Arne Astrup et al., *The Role of Higher Protein Diets in Weight Control and Obesity-Related Comorbidities*, 39 INT’L J. OBESITY 721 (2014).

188. See Mu Chen et al., *Effects of Dairy Intake on Body Weight and Fat: A Meta-Analysis of Randomized Controlled Trials*, 96 AM. J. CLINICAL NUTRITION 735 (2012).

189. Thorning et al., *supra* note 185, at 2.

190. *Id.* at 3.

191. See Rene Rizzoli, *Dairy Products, Yogurts, and Bone Health*, 99 AM. J. CLINICAL NUTRITION 1256S (2014).

192. Thorning et al., *supra* note 185, at 3.

193. *Id.*

194. *Id.* at 4.

195. *Id.* at 5.

196. *Id.*

197. See Marianne Jakobsen et al., *Intake of Carbohydrates Compared with Intake of Saturated Fatty Acids and Risk of Myocardial Infarction: Importance of the Glycemic Index*, 91 AM. J. CLINICAL NUTRITION 1764 (2010).

198. See Maria Maersk et al., *Sucrose-Sweetened Beverages Increase Fat Storage in the Liver, Muscle, and Visceral Fat Depot: A 6-Month Randomized Intervention Study*, 95 AM. J. CLINICAL NUTRITION 283 (2011).

drinks have superior health benefits to those of milk.<sup>199</sup> As such, it is again important to be cautious when substituting any beverage for milk for the general population.<sup>200</sup>

#### IV. TRUTH IN LABELING LEGISLATION

##### *A. State Legislation*

In the 2019 Legislative Session, Representative Terry Goodin proposed the Indiana Truth in Labeling Act. This act sought to amend the current laws regarding dairy products to prohibit the sale of drinks if the product does not consist of milk from a cow, goat, or other mammal, and the label implies that the product is a dairy product.<sup>201</sup> After the act was heard, it was referred to the Committee on Agriculture and Rural Development; however, it did not progress from there.<sup>202</sup>

Indiana is one of numerous states that has considered recent legislation regarding the issue of whether plant-based beverages can be labeled “milk.”<sup>203</sup> Some attempts at legislation have been more successful than others, but the common idea behind the recent efforts is clear.<sup>204</sup> Officials across the United States are aware that the labeling of plant-based beverages is raising red flags and are looking for ways to do something about it.<sup>205</sup>

In 2018, North Carolina passed a Farm Bill, stating that plant-based products with the word “milk” on its packaging are mislabeled.<sup>206</sup> This bill also prohibited the sale of these plant-based “milks.”<sup>207</sup> In order to comply with commerce regulations, the large caveat for this bill required at least eleven of a selection of fourteen southern states to enact similar legislation.<sup>208</sup> So far, getting eleven of the named states to follow North Carolina’s lead has been largely ineffective.

Maryland, one of the states mentioned in North Carolina’s bill, did pass the Fair Milk Labeling Bill in 2019.<sup>209</sup> This bill prohibits a person from selling or advertising a product labeled as “milk” or a milk-based product unless it is derived from a cow or other animal.<sup>210</sup> It essentially mirrored all the requirements

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199. See Thorning et al., *supra* note 185.

200. *Id.*

201. H.B. 1350, 121st Gen. Assemb., 2nd Reg. Sess. (Ind. 2020).

202. *Id.*

203. See Sabin, *supra* note 105.

204. *Id.*

205. *Id.*

206. S.B. 711, 2017 Gen. Assemb., Reg. Sess. (N.C. 2018).

207. *Id.*

208. *Id.* (Naming the following states in North Carolina’s Farm Bill: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia).

209. S.B. 922, 2019 Gen. Assemb., Reg. Sess. (Md. 2019).

210. *Id.*

set out in the North Carolina Farm Bill and listed the same provision of eleven out of the same fourteen states needing to enact something similar in order for the bill to be enforceable.<sup>211</sup>

North Carolina and Maryland illustrate the two most successful attempts in the United States in terms of passing legislation imposing more strict definitions and regulations on what can and cannot be labeled as “milk.” Louisiana also passed their Senate Bill 39, which specifically targeted milk labeling of products other than ones that come from cows, goats, or other hooved mammals, effective on August 1, 2019.<sup>212</sup>

Other states have attempted to pass similar bills in recent years as well, although most of those efforts have been unsuccessful. Among these attempts include Kentucky Senate Bill 81,<sup>213</sup> New York Assembly Bill A8144A,<sup>214</sup> Oklahoma House Bill 2994,<sup>215</sup> West Virginia Senate Bill 320,<sup>216</sup> and Nebraska Legislative Resolution 13.<sup>217</sup> Virginia’s HB 119 was passed by both the House and Senate of Virginia, but was ultimately vetoed by the Governor and sustained by the House.<sup>218</sup> Wisconsin’s Assembly Bill 516 also attempted to put in place a statute that would be similar to the ones in North Carolina and Maryland.<sup>219</sup>

#### *B. The DAIRY PRIDE Act*

In December 2016, members of Congress collectively requested the FDA to take a stand against the mislabeling of products imitating milk.<sup>220</sup> They argued that allowing the term “milk” on products that did not contain milk from a cow was “misleading to consumers, harmful to the dairy industry and a violation of milk’s standard of identity.”<sup>221</sup>

Then came the Defending Against Imitations and Replacements of Yogurt, milk, and cheese to Promote Regular Intake of Dairy Everyday Act, or the DAIRY PRIDE Act, which was first introduced by Wisconsin Senator Tammy Baldwin in January 2017.<sup>222</sup> A second push for the same act was made again in 2019, this time cosponsored by Senator Baldwin and Idaho Senator Jim Risch.<sup>223</sup>

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211. *Id.*

212. S.B. 39, 2019 Reg. Sess. (La. 2019).

213. S.B. 81, 2020 Gen. Assemb., Reg. Sess. (Ky. 2020).

214. S.B. A8144--A, 2019-2020 Gen. Assemb. Reg. Sess. (N.Y. 2019).

215. H.B. 2994, 57th Leg., 2nd Sess. (Okla. 2020).

216. S.B. 320, 2020 Gen. Assemb., Reg. Sess. (W. Va. 2020).

217. S. Res. 13, 106th Leg., 1st Sess. (Neb. 2019).

218. H.B. 119, 2020 Gen. Assemb., Reg. Sess. (Va. 2020).

219. H.B. 516, 2019 Gen. Assemb., Reg. Sess. (Wis. 2019).

220. Leone, *supra* note 5, at 440.

221. *Id.*

222. Sipple, *supra* note 33.

223. Press Release, Sen. Tammy Baldwin, Baldwin, Risch Lead Bipartisan Effort to Stand Up for America’s Dairy Farmers (Jan. 23, 2020), <https://www.baldwin.senate.gov/press-releases/baldwin-risch-standing-up-for-dairy-farmers> [<https://perma.cc/C537-MLAJ>].

The main goal of the DAIRY PRIDE Act was to prevent products with plant-based ingredients from being mislabeled as “milk,” “yogurt,” or “cheese.”<sup>224</sup>

The driving reason for this nationwide legislation was that, although the FDA defines milk as coming from mammals, they have not enforced labeling regulations consistent with these definitions.<sup>225</sup> In turn, this hurts dairy farmers across the United States that are working to ensure that the milk and other dairy products they are producing are meeting FDA standards and are nutritious, all while their plant-based counterparts are getting by due to lax enforcement of federal guidelines.<sup>226</sup> The spread of these mislabeled plant-based products is only increasing, all of which contain varying ingredients and nutrient levels and are not equivalent to that from dairy milk.<sup>227</sup>

In further support of the DAIRY PRIDE Act, Senators Baldwin and Risch penned a bipartisan letter on behalf of dairy farmers to Dr. Stephen Hahn, the Commissioner of the FDA.<sup>228</sup> The letter emphasized the hard work that dairy farmers put into ensuring the milk they are producing is healthy, nutrient-dense, and otherwise complies with regulations set forth by the FDA, as well as stressing how consumers often assume that plant-based alternatives are provided with the same level of care.<sup>229</sup> The letter proposed a call to action to Commissioner Hahn, referencing the comment period that was initiated by former Commissioner Gottlieb to review regulations on dairy labeling, and encouraged Commissioner Hahn to address the issue for the sake of fairness to dairy farmers across America.<sup>230</sup>

### *C. Why Indiana Should Adopt Truth in Labeling Legislation*

The FDA already has a standard of identity set for milk labeling.<sup>231</sup> Enactment of the DAIRY PRIDE Act would require the FDA to issue guidance for nationwide enforcement of mislabeled plant-based products, as well as keep the FDA accountable for enforcing milk’s standard of identity.<sup>232</sup>

The recent upswing in proposed legislation seeking to regulate plant-based product labeling sends a message to the FDA that this is a topic that consumers

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224. *Id.*

225. *Id.*

226. *Id.*

227. *See supra*, SECTION III.

228. Press Release, Sen. Tammy Baldwin, *supra* note 223.

229. *Id.*

230. *Id.* The COVID-19 pandemic put these efforts on hold for the time being, but chances are that there will continue to be a push for fair labeling on a national level for years to come, especially as the popularity of milk alternatives is projected to continuously rise.

231. *See* 21 C.F.R. § 101.3 (2021).

232. Beth Newhart, *US Dairy Groups Press Congress on Dairy Pride Act*, DAIRYREPORTER (Feb. 6, 2020), <https://www.dairyreporter.com/Article/2020/02/06/US-dairy-groups-press-Congress-on-Dairy-Pride-Act> [<https://perma.cc/L62Z-JCZL>].

and their representatives care about and that they want to see changes made.<sup>233</sup> Even though many of the states' proposed bills never made it out of committee discussions, the push for a change in labeling is more prevalent than it has ever been.<sup>234</sup> The variance between states' legislation efforts also signals to the FDA that they need to lead the nation in regulation of plant-based labeling.<sup>235</sup> Since the success stories from North Carolina and Maryland rely heavily on similar bills being passed in other states so as not to negatively impact commerce, a more uniform approach led by the FDA is likely the way for any real change to be made.<sup>236</sup>

Efforts taken by individual states are still important. The introduction of Indiana's Truth in Labeling Act in 2019 was just the beginning of the important conversations that need to be had surrounding milk alternatives.<sup>237</sup> The more states that discuss bills like this year after year, the greater the awareness will be about the need for change.<sup>238</sup> One state alone cannot change the entire nation, but each state that takes a step in the right direction puts the nation that much closer to making a change.<sup>239</sup>

## V. RECOMMENDATIONS

### *A. Following Canada and Europe's Lead*

The United States is not the only place where labeling of dairy products and their alternatives has been a hot button issue recently. For instance, a vegan "cheese" shop in Vancouver, Canada was recently prohibited by the Canadian Food Inspection Agency from using the word "cheese" in marketing and labelling its products.<sup>240</sup> Similar to milk, cheese is seen as a common name in Canada, and is defined by the fact that it must be made from milk and its byproducts, as milk is understood under the common definition of the word.<sup>241</sup> As a result of this, the shop could face a fraudulent labelling charge, as well as fines under Canada's

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233. John Breslin, *In North Carolina, Plant-Based Milk Isn't Milk, But Only if Other Southern States Agree*, FORBES (June 18, 2018), <https://www.forbes.com/sites/legalnewsline/2018/06/18/in-north-carolina-plant-based-milk-isnt-milk-but-only-if-other-southern-states-agree/?sh=280ecc346639> [https://perma.cc/3W54-FTZX].

234. *See id.*

235. *Id.*

236. *Id.*

237. *Id.*

238. *Id.*

239. *Id.*

240. Alexandria Gill, *Vegan Food Producer Ordered to Drop the Word 'Cheese' From Its Marketing*, GLOBE & MAIL (Feb. 20, 2019), <https://www.theglobeandmail.com/business/small-business/marketing/article-vegan-food-producer-ordered-to-drop-the-word-cheese-from-its/> [https://perma.cc/9Y7F-845S].

241. *Id.*

Food and Drug Regulations Act Section 5(2).<sup>242</sup>

“Milk” is defined in Canada as “the lacteal secretion, free from colostrum, obtained from the mammary gland of an animal.”<sup>243</sup> This is almost identical to the definition of “milk” in the United States’ FDA regulations.<sup>244</sup> Since the term “milk” cannot be used for nondairy products, many brands instead opt to call plant-based alternatives something along the lines of “almond beverage.”<sup>245</sup>

European countries have also passed rather strict regulations on what words non-dairy products are able to use on their labels. For instance, a 2017 lawsuit coming out of Germany was a pivotal decision in milk labeling in Europe. In *Verband Sozialer Wettbewerb eV v. TofuTown.com GmbH*, the European Court of Justice ruled that Tofu-Town, a German company, could not call its plant-based products names like “Soyatoo Tofubutter,” “Plant Cheese,” “Veggie Cheese,” or “Cream.”<sup>246</sup> This case also confirmed that the term “milk” was reserved only for products containing actual milk from mammals.<sup>247</sup> This decision resulted in the European Dairy Association releasing guidelines to address the protected definitions and designations of milk and its derived products in the European Single Market, and also sought to enforce such regulations on a national level.<sup>248</sup>

Another closely related case to the *Tofu-Town* decision stems out of the Dutch Court of Appeals, involving a company called Alpro, as well as the Dutch Dairy Organization.<sup>249</sup> This decision determined, among other things, that stating “alternative to yogurt” or “alternative to cream” on packaging is allowed.<sup>250</sup> However, the use of the word “custard” was deemed illegal because it is a reserved name for a dairy product, and Alpro was not using it on a product with dairy in it.<sup>251</sup> The court also emphasized the importance of being careful not to mislead consumers in an advertisement and being sure to clearly designate when a product is derived from a source like soy.<sup>252</sup>

The European Parliament voted on proposed amendments to the Common Agricultural Policy (CAP) in October 2020, further restricting dairy alternative

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242. *Id.*

243. *Definitions*, GOV'T CAN. (Apr. 24, 2020), <https://www.inspection.gc.ca/food-label-requirements/labelling/industry/dairy-products/eng/1393082289862/1393082368941?chap=16#s22c16> [https://perma.cc/U973-LXAX].

244. *See* 21 C.F.R. § 131.110 (2021).

245. Sabin, *supra* note 105.

246. *See* Case C-422/16, *Verband Sozialer Wettbewerb eV v. Tofu-Town.com GmbH*, European Court of Justice, Seventh Chamber (June 14, 2017), not yet published (EU).

247. Leone, *supra* note 5, at 437.

248. *Id.*

249. Sarah Arayess & Fleur Jeukens, *Alpro's Dairy Alternatives: What is Allowed and What is Not in the Light of ECJ's TofuTown?*, 13 EUR. FOOD & FEED L. REV. 55, 55-56 (2018).

250. *Id.*

251. *Id.*

252. *Id.*

labeling.<sup>253</sup> Words like “cheese,” “yogurt,” and “milk” are already banned on plant-based dairy alternatives in the EU.<sup>254</sup> The vote prevents descriptors of “yogurt-style” or “cheese-alternative” to be put on non-dairy products.<sup>255</sup> These new restrictions will force EU producers to carefully think about how they label their new and existing products, taking care to avoid all descriptors that would liken a plant-based product to its dairy counterpart.<sup>256</sup>

### *B. Recommendations of Solutions Indiana Could Make*

About half of all Americans surveyed in a 2019 study believed that plant-based beverages should not be allowed to use “milk” on their labels when told of the nutritional differences.<sup>257</sup> This number jumped to 61% when the participants were informed that the FDA specifically defines “milk” as an animal product.<sup>258</sup>

Perhaps the most challenging question to answer is if not “milk,” what can these products be called? Of course, there is no one perfect answer to this question, however something needs to be done to distinguish that what is known as “almond milk” or “soy milk” are not the same, especially from a nutrition perspective, as cow’s milk.

Most importantly, a product’s packaging needs to clearly designate that it is a plant-based alternative to milk. Perhaps following Canada’s lead and promoting something along the lines of “almond drink” or “almond beverage” is most appropriate.<sup>259</sup> In both 2008 and 2012, the FDA issued warning letters to two companies stating that the term “soy milk” was not an appropriate common name for a product that does not contain milk as it is legally recognized.<sup>260</sup> In the alternative, the FDA suggested calling it “soy drink” or “soy beverage,” both of which they would recognize as an acceptable common name.<sup>261</sup> The words “beverage” and “drink” convey the purpose of the liquid in the package, all while staying away from misrepresentation or misbranding.

Another possible option is that, under the main designation of what the product is, it could be suitable to state something like “a plant-based alternative to milk.” This would be a more moderate approach than the EU has taken,<sup>262</sup> as it allows the word “milk” to be on the packaging as long as it is clear that it is an

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253. Ciara Cullen & Sophie Tuson, *European Parliament Votes on Plant-Based Food Labels*, REYNOLDS PORTER CHAMBERLAIN LLP (Nov. 25, 2020), <https://www.rpc.co.uk/perspectives/food-and-drink/european-parliament-votes-on-plant-based-food-labels/> [<https://perma.cc/AT3E-MAJL>].

254. *Id.*

255. *Id.*

256. *See id.*

257. “Milk” *Product Labeling in the U.S.*, Ipsos (Jan. 10, 2019), <https://www.ipsos.com/en-us/news-polls/milk-product-labeling> [<https://perma.cc/C7N3-HU46>].

258. *Id.*

259. *See* Sabin, *supra* note 105.

260. Leone, *supra* note 5, at 440.

261. *Id.*

262. *See* Cullen & Tuson, *supra* note 253.

alternative.

Rather than referencing milk at all, a suggestion of the beverages' uses could be made on the packaging. For instance, a blurb that says, "Tastes great in smoothies!" or "Try pairing with cereal!" That way, the idea of what the product is gets across through some strategic packaging and marketing, without even needing to reference its potential similarities to milk.

Yet another possible solution would be to include the words "dairy-free" on the label. This would be most effective when paired with the designation of "beverage" or "drink" or even "milk alternative." This gets at the idea that the plant-based beverage is not milk, is not related to or claiming to be similar to milk, and is not nutritionally similar to milk.

If a producer cannot part with the idea of "milk" being on a plant-based label, the qualifier of "nutritionally inferior" could be used. This is likely a less desirable solution to the problem, as it probably is not the best strategy on a producer's part to admit that their product is outright "inferior." A "nutritionally inferior" label is the most truthful statement that could be made when comparing plant-based beverages to cow's milk, and it has the added benefit of taking out a lot of the guess work for the consumer reading the label.

Along these same lines, Indiana could follow Florida's lead, and specifically codify the definition of "imitation milk."<sup>263</sup> Florida defines "imitation milk" as "those foods that have the physical characteristics, such as taste, flavor, body, texture, or appearance, of milk or milk products [ . . . ] but do not come within the definition of 'milk' or 'milk products' and are nutritional inferior to the product imitated."<sup>264</sup> Designating a product as imitation milk allows the word "milk" to still appear on labels, and the word "imitation" more clearly identifies that there are clear differences between milk and the product in question.<sup>265</sup>

Finally, a solution could be to take the word "milk" and alter it somehow, so that a letter is missing or changed. For instance, producers could replace the "i" in "milk" with "y," making it "mylk."<sup>266</sup> Another possibility is omitting the letter "i" altogether, creating the word "mlk." The well-known protein drink brand "Muscle Milk" sells its products in the United States and Canada.<sup>267</sup> Due to the labeling laws in Canada, the brand was forced to come up with a way of labeling the protein drink in a way that would abide by the regulations set out by the Canadian Food Inspection Agency.<sup>268</sup> The parent company of the brand ultimately settled on labeling the protein drink products as "Muscle Mlk."<sup>269</sup> Although the

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263. See FLA. STAT. § 502.012 (2020).

264. *Id.*

265. See Moreno & Berman, *supra* note 27.

266. See, e.g., Iselin Gambert, *Got Mylk?: The Disruptive Possibilities of Plant Milk*, 84 BROOK. L. REV. 801 (2019).

267. *Muscle Milk – A Uniquely Canadian Dairy Story*, MILLER IP LAW (May 17, 2018), <http://www.milleriplaw.com/blog/2018/5/17/muscle-mlka-uniquely-canadian-dairy-story> [<https://perma.cc/VP5P-24N6>].

268. *Id.*

269. *Id.*

word “mlk” looks a lot like “milk,” it technically complies with the necessary regulations, and is able to be sold in Canadian stores.<sup>270</sup>

This brings up the point that manufacturers and producers of plant-based beverages should have minimal issues in complying with the standards set out by the FDA.<sup>271</sup> Many companies distribute their products in the United States, as well as in international markets, and thus likely have to have an alternative way of labeling their products anyway.<sup>272</sup> Making the switch to using the wording or labeling already in place on the international versions of the products is a relatively small change in the long run.<sup>273</sup>

These changes in labeling would be most effective if paired with widespread consumer education about the importance for a balanced diet, as well as nutrition education efforts aimed at increasing awareness of the nutritional limitations of plant-based beverages.<sup>274</sup> Many consumers are under-informed when it comes to exactly what different components of nutrition labels mean.<sup>275</sup> This causes a problem when it comes time to buy the healthiest option at the grocery store, and even when comparing types of plant-based beverages to milk.<sup>276</sup> Nutrition education efforts could be directed towards health care providers as well.<sup>277</sup> Not everyone has access to a dietitian, and so it is important that physicians are well-informed of the differences between milk and its alternatives when making dietary recommendations.<sup>278</sup>

## VI. CONCLUSION

In the future, that local barista who once called out an order for an “iced oat milk latte” may very well start yelling that a “small chai latte made with almond beverage” is ready to be picked up at the counter. Grocery store refrigerators will be stocked with cartons labeled “soy drink” and “rice-based beverage.” Perhaps even coffee shops and grocery stores will have a guide listing out the nutrients available in the various plant-based options they offer, in an effort to help consumers make the best-informed decision for their family’s nutritional needs. These scenarios may seem like a far-off stretch of the imagination in some respects, but the steps to getting there have already been initiated across the world, and even in certain locations in the United States. The push for legislation to hold manufacturers of plant-based beverages accountable for what they are

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270. *See id.*

271. *See* Sabin, *supra* note 105.

272. *Id.*

273. *Id.*

274. Russell Merritt et al., *North American Society for Pediatric Gastroenterology, Hepatology, and Nutrition Position Paper: Plant-Based Milks*, 71 J. PEDIATRIC GASTROENTEROLOGY & NUTRITION 276, 278 (2020).

275. *See id.* at 278-79.

276. *Id.*

277. *Id.*

278. *Id.*

truly selling is also a step in the direction of ensuring the population is healthier as a whole. If consumers are more aware of what they are purchasing and the importance that it has on their nutritional status, there is a lot of potential to reduce many of the health issues that have plagued the United States for much of recent history. Differentiating between milk and its plant-based counterparts is just the beginning.

There is never going to be a perfect solution to the endless disagreement between what can or cannot be designated as “milk.” Chances are, one organization, manufacturer, or individual will always be unhappy with the designation, whether it be dairy farmers or plant-based product companies. The important thing is that there are many differences between cow milk and its plant-based alternatives, enough so that the plant varieties do not deserve the label of “milk.” Indiana has already proposed legislation that has previously been declared “dead in the water,” but the fight is long from over. As the popularity of plant-based beverages continues to rise, and the overall concern with nutrition and health status continues to be brought up, being informed on the wide variety of options on the market, and the different nutrients, or lack thereof, that each has to offer is getting increasingly important. For Indiana to keep up a status of happy and healthy Hoosiers, it is imperative that a change is made.