



## National Milk Producers Federation

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July 15, 2010

The Honorable Kathleen Sebelius  
Secretary of Health and Human Services  
200 Independence Avenue, SW  
Washington DC 20201

The Honorable Thomas J. Vilsack  
Secretary of Agriculture  
1400 Independence Avenue, SW  
Whitten Bldg, Room 200A  
Washington DC 20250

### **Re: Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans, 2010**

Dear Secretaries Sebelius and Vilsack:

The National Milk Producers Federation (NMPF) is pleased to submit comments on the Report of the Dietary Guidelines Advisory Committee (DGAC) on the Dietary Guidelines for Americans (DGA), 2010. The National Milk Producers Federation, based in Arlington, VA, develops and carries out policies that advance the well-being of dairy producers and the cooperatives they own. NMPF's 30 member cooperatives produce the majority of the U.S. milk supply, making NMPF the national policy voice of more than 40,000 dairy producers.

With two-thirds of Americans currently overweight or obese, strategies to address the obesity epidemic are the central focus of the 2010 DGAC Report. The proportion of individuals who are overweight or obese is increasing at dramatic rates, which has been linked to higher risks for developing type 2 diabetes, high blood pressure, and risk factors for cardiovascular disease. However, even without the obesity epidemic, nutritionally

suboptimal diets increase the risk of chronic diseases. NMPF recognizes the significant challenges faced by the DGAC and the Secretaries of Health and Human Service (HHS) and the Department of Agriculture (USDA) in formulating guidelines that address a population that is overweight and/or obese from excessive energy intake, while simultaneously under-nourished from inadequate consumption of essential nutrients.

To address this undernourished/overfed population, the 2010 DGAC Report emphasizes the need to reduce calorie intake while meeting nutrient recommendations through increased consumption of nutrient-rich foods. Fluid milk, yogurt, and cheese are nutrient-rich foods, and their consumption should be encouraged. Consumption of milk and dairy products is linked to decreased risk of cardiovascular disease, decreased blood pressure, and lower incidence of type 2 diabetes. Milk and dairy products are healthy nutrient-rich choices and, in moderation, can fit into a pattern of healthy eating.

In the comments that follow, NMPF will address several issues in the 2010 DGAC Report related to milk and dairy products in further detail.

### **Milk and Dairy Products Are Nutrient-Dense Foods.**

The central focus of the 2010 Report of the DGAC is to reduce the incidence of obesity by encouraging consumption of nutrient-dense foods while also lowering caloric intake. The 2010 Report of the DGAC defined nutrient-dense foods as those foods *“that are naturally rich in vitamins, minerals, and phytochemicals, and are lean or low in solid fats and without added solid fats, sugars, starches, or sodium and that retain naturally-occurring components such as fiber”*<sup>1</sup>. The report further specifically identified low-fat forms of fluid milk as nutrient-dense foods.

Milk and dairy products are significant sources of essential nutrients for Americans. A serving of low-fat milk is an excellent source of calcium, phosphorus, riboflavin, and vitamin D, and a good source of protein, potassium, vitamin A, vitamin B12, and niacin (niacin equivalents). Milk and dairy products (fluid milk, milk drinks, desserts, yogurt and cheese) are the primary source of three of the four nutrients in the diet – vitamin D, calcium, and potassium – that are underconsumed by Americans age two and older and

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<sup>1</sup> Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans, 2010. Appendix E-2: Glossary, p E2-6.

present a substantial public health concern<sup>2</sup>. Milk and dairy products are also major sources of magnesium and phosphorus, two shortfall nutrients additionally identified by the DGAC. The significant nutrient contribution of milk, relative to its caloric contribution, was further emphasized through the DGAC's Food Pattern Modeling Analysis: *"In the 2000-calorie pattern, the Milk Group contributes only 12 percent of the calories, but over 70 percent of the calcium and vitamin D; 30 to 40 percent of the phosphorus, vitamin A, riboflavin, and vitamin B-12; and 20 to 30 percent of the protein, potassium, zinc, and choline."*<sup>3</sup>

Consumption of nutrient-dense foods provides individuals the opportunity to meet recommended nutrient intake levels without exceeding caloric needs. The 2010 Dietary Guidelines should continue to encourage consumption of 2 servings per day of milk and dairy products for children ages 2-8 and 3 servings per day for those older than 9, as recommended by the DGAC. The 2010 DGAC Report recommendation was based on review of the scientific evidence of the health benefits provided by consuming dairy products – improved bone health in children, reduced risk of cardiovascular disease, reduced blood pressure, and lower incidence of type 2 diabetes – as well as the fact that those who consume milk as children are more likely to do so as adults. Those who omit dairy foods from or consume lesser amounts of dairy foods in their diet may experience nutrient deficits of calcium, potassium, magnesium, vitamin D, and vitamin A<sup>4</sup>.

The DGAC has recognized the positive health outcomes associated with dairy products and is encouraging Americans to increase consumption of nutrient-dense foods, like milk and dairy products. However, there is a significant disparity between current recommendation and consumption levels (about one-half the servings) for milk and dairy products<sup>5</sup>. Given the importance of including nutrient-dense milk and dairy products in the diet, "milk and dairy products" should be included among the foods listed in the first principle of the "Four Main Integrated Findings to be Used in Developing the 2010 Dietary Guidelines for Americans"<sup>6</sup>.

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<sup>2</sup> Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans, 2010. Part D. Section 2: Nutrient Adequacy.

<sup>3</sup> Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans, 2010. Appendix E-3.6, p 2.

<sup>4</sup> Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans, 2010. Part D. Section 4: Protein, p D4-19.

<sup>5</sup> Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans, 2010. Part B. Section 2: The Total Diet, p B2-7.

<sup>6</sup> Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans, 2010. Part B. Section 3: Translating and Integrating the Evidence, p B3-2.

### Summary:

- The 2010 Dietary Guidelines should recognize milk and dairy products as nutrient-dense foods, and encourage consumption of 3 servings per day for those 9 and older (2 servings per day for children ages 2-8).
  - Low-fat milk and dairy products should be specifically identified among the foods for which enhanced consumption should be encouraged by the next Dietary Guidelines.
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### **Dietary Guidelines Should Not Be Overly Restrictive of Nutrient-Dense Dairy Foods That Can Fit Into a Pattern of Healthful Eating.**

As mentioned previously, a basic tenet of the 2010 DGAC Report is to replace energy-dense foods with nutrient-dense foods, without exceeding caloric needs. In fact, the definition of and recommendation to consume nutrient-dense foods emphasizes a reduction in consumption of solid fats and added sugars, which currently comprise more than one-third of the caloric intake of Americans. The 2010 DGAC Report does not state a specific limit for consumption of solid fats and added sugars, but repeatedly emphasizes a reduction in consumption of sugar-sweetened beverages and other foods and drinks that are low in nutrients. It is critical to note, however, that small amounts of added sugars or solid fats, in moderation, can boost the nutrient profile of the diet by encouraging consumption of nutrient-dense foods while providing the consumer a positive sensory experience – as is exemplified by low-fat or fat-free flavored milk, sugar-sweetened low-fat yogurt, and reduced-fat cheeses.

The 2005 Dietary Guidelines for Americans recognized this concept by stating, *“In some cases, small amounts of sugars added to nutrient-dense foods, such as breakfast cereals and reduced-fat milk products, may increase a person’s intake of such foods by enhancing the palatability of these products, thus improving nutrient intake without contributing excessive calories.”*<sup>7</sup> The addition of small amounts of sugar can help encourage consumption of nutrient-dense dairy products and the essential nutrients they provide. For example, children and adolescents who consume greater amounts of dairy foods

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<sup>7</sup> Dietary Guidelines for Americans, 2005, [www.healthier.us.gov/dietaryguidelines](http://www.healthier.us.gov/dietaryguidelines) Chapter 7 Carbohydrates, p 37.

with added sugar (flavored milk, sugar-sweetened yogurt, ice cream) also consume more total servings of dairy foods and dietary calcium<sup>8</sup>.

Research indicates that current consumption of nutrient-poor beverages (i.e., soft drinks, juice drinks) has displaced fluid milk consumption and has resulted in deficits of nutrients that dairy foods would otherwise provide<sup>9,10</sup>. Flavored milk is among a collection of strategies to significantly improve nutrient intake. In addition to calcium, those who consume flavored milk also benefit from increased intakes of phosphorus, magnesium, potassium, and vitamin A compared to non-milk drinkers<sup>11</sup>. Servings of plain milk and flavored milk provide the same essential nutrients, but flavored milk contributes approximately 60 additional calories (per 8-ounce serving) due to added sugars. Considering the importance of dairy products to a healthy dietary pattern and that the consumption of flavored milk does not negatively affect weight status<sup>12</sup>, the 60 calories tradeoff is surpassed by the overall dietary benefit of the nutrients that are delivered. To further improve the nutrient profile of flavored milks offered in schools, many processors are reformulating these products to be lower in fat and sugar. In fact, during the 2008-2009 school year, 93% of flavored milk sold in schools was low-fat or fat-free and the average calorie level for flavored milk was 6% lower than the previous year, meaning a decrease of 10 calories per 8-ounce serving of milk<sup>13</sup>.

The 2010 DGAC Report contains strong language about added sugars, specifically as related to sugar-sweetened beverages – “*Avoid sugar-sweetened beverages*” is among the specific recommendations listed under the first of the “Four Main Integrated

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<sup>8</sup> Frary, C. D., R. K. Johnson, and M. Q. Wang. 2004. Children and adolescents’ choices of foods and beverages high in added sugars are associated with key nutrients and food groups. *Journal of Adolescent Health*. 34: 56-63.

<sup>9</sup> Johnson, R. K., C. Frary, and M. Q. Wang. 2002. The nutritional consequences of flavored-milk consumption by school-aged children and adolescents in the United States. *Journal of the American Dietetic Association*. 102: 853-856.

<sup>10</sup> Keller, K. L., J. Kirzner, A. Pietrobelli, M.-P. St.-Onge, and M. S. Faith. 2009. Increased sweetened beverage intake is associated with reduced milk and calcium intake in 3- to 7-year-old children at multi-item laboratory lunches. *Journal of the American Dietetic Association*. 109: 497-501.

<sup>11</sup> Murphy, M. M., J. S. Douglass, R. K. Johnson, and L. A. Spence. 2008. Drinking flavored or plain milk is positively associated with nutrient intake and is not associated with adverse effects on weight status in US children and adolescents. *Journal of the American Dietetic Association*. 108: 631-639.

<sup>12</sup> Murphy, M. M., J. S. Douglass, R. K. Johnson, and L. A. Spence. 2008. Drinking flavored or plain milk is positively associated with nutrient intake and is not associated with adverse effects on weight status in US children and adolescents. *Journal of the American Dietetic Association*. 108: 631-639.

<sup>13</sup> 2009 Study “The Impact on Student Milk Consumption and Nutrient Intakes from Eliminating Flavored Milk in Schools,” conducted in 58 elementary and secondary schools. Funded by the Milk Processor Education Program (MilkPEP) and conducted by Prime Consulting Group, presented at the School Nutrition Association Annual National Conference 2010. Accessed from: <http://www.milkdelivers.org/schools/flavored-milk/>

Findings to be Used in Developing the 2010 Dietary Guidelines for Americans”<sup>14</sup>. The 2010 DGAC Report defines sugar-sweetened beverages as “*Liquids that are sweetened with various forms of sugars that add calories. These beverages include, but are not limited to, soda, fruit ades, and sports drinks*”<sup>15</sup>.

Unlike nutrient-poor sugar-sweetened beverages, flavored milk does not displace nutrient-dense foods from the diet. Flavored milk does, however, contribute positively to the overall nutrient quality of the diet and increases overall consumption of dairy foods toward the recommended number of servings. Consumption of milk in childhood is linked to consumption of milk in adulthood. Further, greater consumption of low-fat dairy products in adulthood has been linked to better diet quality and an overall more healthful lifestyle among young adults<sup>16</sup>. Therefore, it is important that the 2010 Dietary Guidelines specifically recognize flavored milk as a nutrient-dense food, and clarify it is not contained within the category of “sugar-sweetened beverages” – a term which consumers otherwise might mistakenly assume includes flavored milk. Such a demarcation is supported by the report of the 2010 Dietary Guidelines Advisory Committee:

- The 2010 DGAC Report states “*Consumption of sugar-sweetened beverages in childhood should be discouraged (1) because of the positive association with increased adiposity; and (2) because of the need to replace empty calories with nutrient-rich energy for optimal growth and development.*”<sup>17</sup>

Unlike the sugar-sweetened beverages listed (sodas, fruit ades, and sports drinks), flavored milk does not contribute to adiposity<sup>18</sup>. Children and adolescents who drink plain or flavored milk do not have higher body mass indices (BMI) than non-milk drinkers<sup>19</sup>. Furthermore, flavored milk represents an

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<sup>14</sup> Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans, 2010. Part B. Section 3: Translating and Integrating the Evidence, p B3-2.

<sup>15</sup> Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans, 2010. Appendix E-2: Glossary, p E2-8.

<sup>16</sup> Poddar, K. H., K. W. Hosig, S. M. Nickols-Richardson, E. S. Anderson, W. G. Herbert, and S. E. Duncan. 2009. Low-fat dairy intake and body weight and composition changes in college students. *Journal of the American Dietetic Association*. 109: 1433-1438.

<sup>17</sup> Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans, 2010. Part D. Section 1: Energy Balance, p D1-24.

<sup>18</sup> Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans, 2010. Part D. Section 1: Energy Balance, p D1-40 through D1-43.

<sup>19</sup> Murphy, M. M., J. S. Douglass, R. K. Johnson, and L. A. Spence. 2008. Drinking flavored or plain milk is positively associated with nutrient intake and is not associated with adverse effects on weight status in US children and adolescents. *Journal of the American Dietetic Association*. 108: 631-639.

excellent delivery vehicle for essential nutrients, including three of the four nutrients of concern (vitamin D, calcium and potassium), and does not simply provide empty calories.

- In defending their choice of wording in the recommendation “*Avoid sugar-sweetened beverages*”, the 2010 DGAC stated, “*we couldn’t think of... a nutritional reason why we should actually say you need to eat or drink sugar-sweetened beverages, so we had ‘avoid’.*”<sup>20</sup>

Given the disparity between current intake and recommended consumption of dairy foods and the DGAC’s recognition that the nutritional contribution of milk to the diet surpasses its caloric contribution, clearly consumption of flavored milk should be encouraged. Recent research has shown that removing flavored milk from schools results in significant decreases in overall milk consumption, resulting in a loss of the nutrients usually provided by milk<sup>21,22</sup>. Flavored milk simply should not be included among the products in the category of “sugar-sweetened beverages to be avoided”.

Consistent with the 2005 Dietary Guidelines, a recent statement on dietary sugars by the American Heart Association<sup>23</sup> confirmed adding small amounts of sugars to nutrient-rich foods, like low-fat or fat-free flavored milk, improves overall diet quality. This strategy is also relevant to flavored, sugar-sweetened low-fat or fat-free yogurt. The 2010 DGAC Report encourages individuals who may be lactose intolerant to look for nutrient-rich dairy foods that contain reduced amounts of lactose, rather than eliminate dairy foods from their diets altogether<sup>24</sup> – and one product that can be tolerated by many individuals who are lactose intolerant is yogurt.

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<sup>20</sup> Nelson, M. Archived recordings of the Sixth (Final) Meeting of the 2010 Dietary Guidelines Advisory Committee May 12, 2010. From audio transcript Section 1, 0:49:50 (hr:min:sec).

<sup>21</sup> Patterson J. and M. Sidel. 2009. The removal of flavored milk in schools results in a reduction in total milk purchases in all grades, K-12. *Journal of the American Dietetic Association*. 109: A97.

<sup>22</sup> 2009 Study “The Impact on Student Milk Consumption and Nutrient Intakes from Eliminating Flavored Milk in Schools,” conducted in 58 elementary and secondary schools. Funded by the Milk Processor Education Program (MilkPEP) and conducted by Prime Consulting Group, presented at the School Nutrition Association Annual National Conference 2010. Accessed from:

<http://www.milkdelivers.org/schools/flavored-milk/>

<sup>23</sup> Johnson, R. K. L. J. Appel, M. Brands, B. V. Howard, M. Lefevre, R. H. Lustig, F. Sacks, L. M. Steffen, J. Wylie-Rosett; on behalf of the American Heart Association Nutrition Committee of the Council on Nutrition, Physical Activity, and Metabolism and the Council on Epidemiology and Prevention. 2009. Dietary sugars intake and cardiovascular health: a scientific statement from the American Heart Association. 120: 1011-1020.

<sup>24</sup> Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans, 2010. Part D. Section 2: Nutrient Adequacy, p D2-31.

During yogurt manufacture, starter cultures are added which ferment some of the lactose and also serve as an exogenous source of  $\beta$ -galactosidase for the consumer. Low-fat or fat-free sugar-sweetened yogurt is a nutrient-dense food providing the same essential proteins, vitamins, and minerals as fluid milk. It is important that consumption of palatable, nutrient-rich dairy foods for individuals who are lactose intolerant is encouraged by the 2010 Dietary Guidelines, rather than restricting – because of the addition of small amounts of sugars – an otherwise ideal option for those seeking an alternative to the nutrients in fluid milk.

A similar concept also can be applied to reduced-fat cheeses. Cheese is a nutrient-dense food. It is a good source of high-quality protein and phosphorus, and some cheeses are excellent sources of calcium. Individuals who consume more cheese have greater intakes of dietary calcium<sup>25</sup>, an important nutrient of concern. Cheese is a versatile, appealing food and, because of its low lactose content, hard cheeses are easily digested by those who are lactose intolerant.

The 2010 DGAC Report repeatedly encourages consumption of foods in their most nutrient-dense form, without solid fats or added sugars or sodium<sup>26</sup>, and specifically refers to consumption of low-fat or fat-free dairy products. While low-fat and fat-free cheeses that are low in sodium are more nutrient-dense options than cheeses with higher levels of fat, the 2010 Dietary Guidelines messaging to consumers must also address the issue of availability and palatability of the foods recommended. Both fat and sodium play important roles in the texture, flavor development, functional properties (shreddability, meltability, etc.) and food safety properties (shelf-life and control of microbial populations) of cheese<sup>27</sup>. While the dairy industry is making strides in developing cheeses low in fat and sodium, there are numerous technological challenges that must be overcome before low-fat or fat-free, low-sodium cheeses will be acceptable and widely available to consumers<sup>28,29,30,31</sup>. In 2009, only 1.2% of natural

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<sup>25</sup> Weinberg, L. G., L. A. Berner, and J. E. Groves. 2004. Nutrient contributions of dairy foods in the United States, Continuing Survey of Food Intakes by Individuals, 1994-1996, 1998. *Journal of the American Dietetic Association*. 104: 895-902.

<sup>26</sup> Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans, 2010. Part D. Section 2: Nutrient Adequacy, p D2-14.

<sup>27</sup> Walstra, P., J. T. M. Wouters, and T. J. Geurts. 2006. Chapter 24 “Cheese Manufacture” pages 583-639, *in Dairy Science and Technology*, 2<sup>nd</sup> edition. Taylor & Francis, New York.

<sup>28</sup> Sivak, C. The future of cheese. *Dairy Foods* June 2007.

<sup>29</sup> Tong, P. S. Culturally Speaking: The year of sodium. *Dairy Foods* February 2010.

<sup>30</sup> Jarvis, J. and G. Miller. Cheese in diet and health. *Dairy Foods* March 2010.

<sup>31</sup> Berry, D. Sodium reduction. *Dairy Foods* May 2010.

cheese and 2.4% of processed cheese sold in supermarkets was low-fat or fat-free, according to information from Information Resources, Inc. (IRI).

Narrow recommendations that do not allow for practical considerations of palatability and availability of various cheeses could influence overall nutrient intake. Cheese is often combined with, and can increase consumption of, other nutrient-dense foods such as vegetables and whole grains<sup>32</sup>, for which current intakes are 40% and 85% below target intake levels, respectively<sup>33</sup>. Increasing consumption of these other food groups will lead to greater intake of essential shortfall nutrients (like vitamin A, potassium, and fiber). In addition to increasing acceptability and consumption of other nutrient-dense food groups, reduced-fat cheeses may provide the dietary fat that is essential for and increases absorption of fat-soluble vitamins and phytochemicals (e.g., carotenoids) from vegetables<sup>34,35</sup>.

While the dairy industry is continuing to strive toward providing healthful options that meet consumer expectations, the 2010 Dietary Guidelines must recognize the advantages of promoting consumption of a nutrient-dense food like reduced-fat cheese. A significant percentage (~25-30%) of the calcium in the diet is provided by cheese<sup>36</sup>. Reduced-fat cheese, in moderation, can be included in dietary patterns without compromising the guidance to reduce total fat and caloric intakes. The messaging of the 2010 Dietary Guidelines should not be so restrictive that consumers are forced to abstain from moderate consumption of a variety of nutrient-rich dairy foods in a variety of forms, including reduced-fat cheese.

Because of the focus on health promotion and risk reduction, the Dietary Guidelines form the basis of Federal food, nutrition education, and information programs. Therefore, the 2010 Dietary Guidelines should avoid taking an absolute approach to eliminating solid fats and added sugars from the diet; otherwise, important delivery vehicles (like flavored milk and yogurt, or reduced-fat cheese) for nutrients could

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<sup>32</sup> Donnelly, J. E., D. K. Sullivan, B. K. Smith, C. A. Gibson, M. Mayo, R. Lee, A. Lynch, T. Sallee, G. Cook-Weins, and R. A. Washburn. 2010. The effects of visible cheese on the selection and consumption of food groups to encourage in middle school students. *Journal of Child Nutrition and Management*. vol. 34(1).

<sup>33</sup> Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans, 2010. Part B. Section 2: The Total Diet, p B2-7.

<sup>34</sup> Ribaya-Mercado, J. D. 2002. Influence of dietary fat on  $\beta$ -carotene absorption and bioconversion into vitamin A. *Nutrition Reviews*. 60: 104-11.

<sup>35</sup> Brown, M. J., M. G. Ferruzzi, M. L. Nguyen, D. A. Cooper, A. L. Eldridge, S. J. Schwartz, and W. S. White. 2004. Carotenoid bioavailability is higher from salads ingested with full-fat than with fat-reduced salad dressings as measured with electrochemical detection. *American Journal of Clinical Nutrition*. 80:396-403.

<sup>36</sup> Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans, 2010. Appendix E-3.6: Milk Group and Alternatives: Food Pattern Modeling Analysis.

potentially be eliminated from food and nutrition programs or educational messaging altogether.

Summary:

- The 2010 Dietary Guidelines should recognize that small amounts of sugars added to nutrient-dense foods, such as nutrient-dense milk products (flavored milk and yogurt), may increase a person’s intake of such foods by enhancing the palatability of these products, thus improving nutrient intake without contributing excessive calories.
  - The messaging of the 2010 Dietary Guidelines should consider the availability and acceptability of recommended foods, without being so restrictive that consumers can not enjoy moderate consumption of a variety of nutrient-rich dairy foods, including reduced-fat cheese.
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**The Definition of Nutrient-Dense Foods Needs to Be Clarified.**

Increasing consumption of nutrient-dense foods is one of the central principles of the 2010 DGAC Report. Nutrient-dense foods are referred to numerous times throughout the report, and are formally defined therein as *“foods that are naturally rich in vitamins, minerals, and phytochemicals, and are lean or low in solid fats and without added solid fats, sugars, starches, or sodium and that retain naturally-occurring components such as fiber. All vegetables, fruits, whole grains, fish, eggs, and nuts prepared without added solid fats or sugars are considered nutrient-dense, as are lean or low-fat forms of fluid milk, meat, and poultry prepared without added solid fats or sugars. Nutrient-dense foods provide substantial amounts of vitamins and minerals (micronutrients) and relatively few calories”*<sup>37</sup>. NMPF has identified three key areas related to the definition and discussion of nutrient-dense foods which need to be clarified as this concept is developed for the 2010 Dietary Guidelines: 1) the fact that any amount of added solid fats, sugars, or sodium disqualify a food as nutrient-dense; 2) the importance of retaining naturally-occurring components in nutrient-dense foods; and 3) the concept that nutrient-dense foods are minimally processed.

While the 2005 Dietary Guidelines for Americans simply defined nutrient-dense foods as *“those foods that provide substantial amounts of vitamins and minerals (micronutrients)*

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<sup>37</sup> Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans, 2010. Appendix E-2: Glossary, p E2-6.

*and relatively few calories*<sup>38</sup>, the definition in the 2010 DGAC Report includes an additional emphasis indicating that nutrient-dense foods are “*without added solid fats, sugars, starches, or sodium*”. The 2010 definition of a nutrient-dense food does not focus on its nutrient contribution relative to the amount of added solid fats, sugars, or sodium; rather, the definition is absolute with respect to defining nutrient-dense foods – those without any amount of added solid fats, sugars, or sodium. As stated in the previous section, low-fat or fat-free flavored milk and sugar-sweetened yogurt, and reduced-fat cheeses are nutrient-dense foods (see above). The presence of nominal amounts of solid fats, sugars, or sodium should not disqualify these foods as nutrient-dense. The significant nutrient contribution of these foods to the overall diet – providing essential nutrients and three of the four nutrients of concern – relative to their caloric intake outweighs the addition of small amounts of solid fats, sugars, or sodium.

Second, the 2010 DGAC Report’s definition of nutrient-dense foods states that these foods also “*retain naturally-occurring components*”. Foods are mixtures of large numbers of compounds, and not all naturally-occurring components should be considered essential to the definition of a nutrient-dense food. Several traditional food processing techniques often remove or destroy naturally-occurring components in foods that would otherwise exert negative effects on the health and overall diet of consumers.

The bioavailability of micronutrients among plant-based diets is particularly influenced by the presence of naturally-occurring components – phytate, polyphenols, and oxalate – common in cereals, legumes, nuts and seeds that exert anti-nutritional properties<sup>39</sup>. In addition to anti-nutritional properties, some naturally-occurring components are toxic or growth-inhibiting. As specific examples, lectins or hemagglutinins (commonly found in beans, peas, soybeans, and lentils) and cyanogenic glycosides (commonly found in some beans and cassava) can exert toxic or anti-nutritional properties when consumed<sup>40</sup>. Through basic food processing operations (soaking, heating, fermentation) these otherwise harmful, naturally-occurring components are removed from these nutrient-rich foods.

Extending this concept to milk and dairy products further illustrates the fact that retention of naturally-occurring components should not be a factor in defining a

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<sup>38</sup> Dietary Guidelines for Americans, 2005.

(<http://www.cnpp.usda.gov/Publications/DietaryGuidelines/2005/2005DGPpolicyDocument.pdf>)

<sup>39</sup> Hotz, C. and R. S. Gibson. 2007. Traditional food-processing and preparation practices to enhance the bioavailability of micronutrients in plant-based diets. *Journal of Nutrition*. 137: 1097-1100.

<sup>40</sup> Shibamoto, T. and L. F. Bjeldanes. 1993. Chapter 5 “Natural Toxins in Plant Foodstuffs” pages 67-96, in *Introduction to Food Toxicology*. Academic Press, Inc., New York.

nutrient-dense food. For dairy foods, the definition of nutrient-dense foods in the 2010 DGAC Report is self-contradictory. During fluid milk processing, the fat is separated from the skim portion of the milk. The milkfat in whole milk is naturally-occurring; however, the definition of nutrient-dense foods specifies those dairy products which are in their low-fat form. Clearly, as described here, retention of naturally-occurring components should not be a criterion in the definition of nutrient-density.

Third, while not included in the formal definition of nutrient-dense foods in the Glossary, the 2010 DGAC Report repeatedly references nutrient-dense foods as being minimally processed. The correlation between food processing and nutrient density of foods is not substantiated. There are many foods that are highly processed, yet would be considered nutrient-dense. Likewise, there are many foods that could be processed to a lesser degree and exhibit poorer nutrient-density. Specifically, the 2010 DGAC Report refers to minimally processed foods:

- *“Nutrient-dense foods are found in a variety of forms but ideally are minimally processed ...”*<sup>41</sup>
- *“Children and adults are also encouraged to ... choose nutrient-dense, minimally processed foods whenever they snack.”*<sup>42</sup>
- The 2010 DGAC Report defines minimally-processed foods as *“food that is processed but retains most of its inherent physical, chemical, sensory and nutritional properties. Many minimally processed foods are as nutritious as the food in its unprocessed form.”*<sup>43</sup>

The implication from the 2010 DGAC Report is that food processing has a negative impact on the nutritional value of foods and reduces their nutrient-density. However, as described in the paragraphs above, food processing can actually improve the nutritional value of food by removing or destroying anti-nutrients often found in plant foods. Food processing can also increase the bioavailability of nutrients in foods. For example, when tomatoes, the main dietary source of lycopene, are mechanically homogenized and heat-treated, the bioavailability of the lycopene significantly increases<sup>44</sup>. Similarly,

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<sup>41</sup> Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans, 2010. Part B. Section 2: The Total Diet, p B2-9.

<sup>42</sup> Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans, 2010. Part D. Section 1: Energy Balance, p D1-7.

<sup>43</sup> Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans, 2010. Appendix E-2: Glossary, p E2-7.

<sup>44</sup> van het Hof, K. H., B. C. J. de Boer, L. B. M. Tijburg, B. R. H. M. Lucius, I. Zijp, C. E. West, J. G. A. J. Hautvast, and J. A. Weststrate. 2000. Carotenoid bioavailability in humans from tomatoes processed in different ways determined from the carotenoid response in the triglyceride-rich lipoprotein fraction of

bioavailability of  $\beta$ -carotene from carrots and spinach that were mechanically homogenized and thermally processed is significantly increased compared to the vegetables in their raw states<sup>45</sup>.

Food processing also plays a role in food safety. Many food processing parameters (e.g., time-temperature combinations during thermal processing, control of water activity, control of food fermentations, and design of food packaging) are specifically employed to minimize the risk of acquiring a foodborne illness from microbial pathogens. The role of food processing in food safety was emphasized in the 2005 Dietary Guidelines for Americans advising consumers not to consume certain foods in their unprocessed (i.e., uncooked or raw) forms – milk, cheese, juices, meats, eggs, seafood, poultry, and sprouts<sup>46</sup>. Specifically for dairy foods, raw milk is a potentially hazardous food and may contain a number of human pathogens. Numerous organizations, including the Centers for Disease Control and Prevention, the American Medical Association, the American Academy of Pediatrics, the National Conference on Interstate Milk Shipments, the National Association of State Departments of Agriculture, the Association of Food and Drug Officials have endorsed the pasteurization of milk. Pasteurizing milk kills pathogens and increases shelf-life, without decreasing the nutrient-density of this product.

The 2010 DGAC Report's definition of "minimally processed" states the food retains "*most of its inherent physical, chemical, sensory and nutritional properties*". "Most" is subjective, and common unit operations in food processing could change all of those properties. For example, the manufacture of pasteurized skim milk alters the physical (less white color), chemical (inactivation of enzymes), sensory (changes to viscosity and flavor), and nutritional properties (reduction in fat content) of the product relative to raw, whole milk. Yet, pasteurized skim milk is a safer and more nutrient-dense product than raw, whole milk (providing more nutrients per calorie).

Food processing – the conversion of raw animal and plant tissue into forms that are convenient and practical to consume – is applied to all foods. No food is consumed that hasn't been processed to some degree. Commercially, fresh produce is at least harvested, cleaned, sorted, and transported before reaching the consumer. The concept

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plasm after a single consumption and in plasma after four days of consumption. *Journal of Nutrition*. 130: 1189-1196.

<sup>45</sup> Rock, C. L., J. L. Lovalvo, C. Emenhiser, M. T. Ruffin, S. W. Flatt, and S. J. Schwartz. 1998. Bioavailability of  $\beta$ -carotene is lower in raw than in processed carrots and spinach in women. *Journal of Nutrition*. 128: 913-916.

<sup>46</sup> Dietary Guidelines for Americans, 2005, [www.healthierus.gov/dietaryguidelines](http://www.healthierus.gov/dietaryguidelines) Chapter 10 Food Safety, p 47-49.

of “minimally processed” should be avoided in the 2010 Dietary Guidelines. The degree of processing that would qualify a food to meet the definition of “minimally processed” cannot be clearly delineated, and is a message that will not be understood by consumers.

The 2010 Dietary Guidelines should not denigrate processed foods as being less nutrient-dense compared to raw or lesser processed foods. There is no association between increased food processing and decreased nutrient density. There are many instances where selecting a food that has been processed to a greater extent represents greater benefit to the health and well-being of the consumer, relative to a food that has been less processed. Encouraging consumers to select less processed foods ignores the contribution of food processing in making a wide variety of nutrient-dense foods readily available and accessible to consumers.

Summary:

- The 2010 Dietary Guidelines should include a definition of nutrient-dense foods that recognizes the positive nutrient contributions of foods relative to their caloric contributions, without being disqualified for containing any amounts of the nutrients to avoid (solid fats, added sugars, sodium, and starches).
  - The definition of nutrient-dense foods in the 2010 Dietary Guidelines should not include the concept of retention of naturally-occurring components.
  - The 2010 Dietary Guidelines should not include language that suggests food processing is related to decreased nutrient density.
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**Dietary Guidelines Should Recognize the Unique Nutrient Package Provided by Milk and Acknowledge Nutrient Differences of Milk Alternatives.**

The 2010 DGAC Report discusses alternative beverages for those who choose not to consume dairy products<sup>47</sup>. NMPF is compelled to clarify a few points around this concept.

1. The names of non-dairy alternatives referenced in the 2010 Dietary Guidelines should reflect current regulations and standards of identity.

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<sup>47</sup> Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans, 2010. Part D. Section 2: Nutrient Adequacy, p D2-31.

The 2010 DGAC Report inappropriately states the names of some non-dairy alternatives by using the names of standardized dairy products (i.e., “soy milk”, “rice milk”, “soy yogurt”). Standards of identity exist in FDA regulations for most dairy products, including milk and yogurt (see 21 CFR Part 131). Milk is defined at 21 CFR 131.110(a) as the “*lacteal secretion, practically free of colostrum, obtained by the complete milking of one or more healthy cows.*” The regulatory standard of identity further defines milk in terms of its percentage content of milk solids and milk fat, and identifies certain permissible ingredients, such as flavorings, that may be included as added ingredients.

A product is misbranded within the meaning of the Food, Drug & Cosmetic Act (“the Act”) if it purports to be a food for which a definition or standard of identity has been prescribed by regulation, but fails to conform to such definition or standard [21 U.S.C. § 343(g)]. For example, a product is misbranded if the product name includes a standardized food name, e.g., “milk”, as part of a name for that product, e.g., “soymilk.” The FDA has so ruled on a number of occasions, issuing warning letters to several manufacturers who have misbranded foods by misusing names of standardized dairy products. For example, in its warning letter of August 8, 2008, FDA informed Lifesoy, Inc. of San Diego, California that several of its products being marketed as “soymilk” were illegally misbranded. In that letter, FDA stated:

*Your Lifesoy...products use the term “milk” as part of their common or usual name. Milk is a standardized food defined as the lacteal secretion, practically free from colostrum, obtained by the complete milking of one or more healthy cows [21 CFR 131.110]. Therefore, we do not consider “soy milk” to be an appropriate common or usual name because it does not contain “milk.”<sup>48</sup>*

The common or usual name of a food must not be confusingly similar to the name of another food and it must describe the basic nature of the food [21 CFR 102.5(a)]. The basic nature of “milk” is that it is the lacteal secretion from a mammal, not the liquid separated from a slurried plant mixture, and NMPF maintains the names of these misbranded products are confusing and misleading to the consumer. NMPF supports the re-naming of these products as “drinks” or “beverages” (e.g., “soy beverage”, “rice drink”, etc.), which is consistent with previous enforcement efforts of the FDA. Adding the name of a plant material in front of the word “milk” does not result in an appropriate name for non-dairy products, as these products do not contain milk or milk ingredients,

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<sup>48</sup> FDA Warning Letter dated August 8, 2008 from Alonza E. Cruse, District Director, FDA Los Angeles District to Mr. Long H. Lai, Lifesoy, Inc.

the plant-based liquids are not permitted ingredients in milk, nor do they represent the common or usual names of these beverages.

Likewise, the 2010 DGAC Report refers to “soy yogurt”<sup>49</sup>. Yogurt is defined at 21 CFR 131.200(a) and the standard of identity explicitly states milk is among the required ingredients and does not include plant-based beverages among the required or optional ingredients that may be used in their manufacture. The food in question is made from plant-based liquid extracts and does not contain any real milk. These non-dairy products with dairy terminology on their packaging do not meet the standard of identity associated with their product names and, therefore, are misbranded according to Section 403 (a), (c), and (g) of the Act. It would be more appropriate, and compliant with current federal regulations, if this product were referred to as “cultured soy”.

As stated above for the non-dairy beverages, adding the name of a plant material in front of a standardized dairy product, like yogurt, does not result in an appropriate common or usual name for these products. The common or usual name must describe the basic nature of the food [21 CFR 102.5(a)] which, for dairy products, is that milk is a significant component.

Although marketers of these alternative products have brazenly co-opted the names of federally standardized milk and dairy products without regard to existing regulations, the Departments should use the correct and legal terminology to refer to specific products or product categories in the 2010 Dietary Guidelines.

2. The names of foods referenced in the 2010 Dietary Guidelines should not mislead consumers as to the true nutrient content of the product.

Although many of these non-dairy products indicate they are fortified with calcium and other nutrients associated with dairy products, a market basket survey indicates these products are (in general) nutritionally inferior to the dairy product they are trying to imitate (see Table 1 and Table 2, attached). Often only certain nutrients are fortified and/or the level to which they are fortified is below that of dairy milk. The category of non-dairy alternative beverages varies widely across and within brands in terms of their formulations or compositions and, hence, their nutrient profiles.

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<sup>49</sup> Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans, 2010. Appendix E-3.3: Vegetarian Food Patterns: Food Pattern Modeling Analysis, p 6.

The 2010 DGAC Report states, “A fundamental premise of the DGAC is that nutrient intake should come primarily from foods.”<sup>50</sup> Specifically, with respect to calcium, the 2010 DGAC Report states, “Some of the most bioavailable sources of calcium are in milk and milk products. Calcium also is found in dark green vegetables, whole grains, beans and soy protein, but it is not as well absorbed due to the oxalic or phytic acid found in these foods. Other foods may be fortified with calcium and numerous calcium supplements are available. However, calcium naturally occurring in foods is the recommended source.”<sup>51</sup>

Therefore, because of the emphasis on obtaining nutrients from foods, it would be contradictory if the 2010 Dietary Guidelines were to suggest plant-based alternatives to fluid milk were equivalent to milk. Plant-based beverages contain very little calcium naturally (for example, soy beverages contains less than one-fifth the calcium of milk). In addition to being non-standardized across the product category in terms of their nutrient content, these beverages also vary in terms of the bioavailability of the calcium present. In fortified foods, the ultimate bioavailability of the nutrients depends on the interactions among a variety of formulation parameters, including the composition of the food matrix, the form of the fortificant, and the level of fortification. While the nutrition facts panel may indicate an equal level of calcium present, depending on the specific conditions and the delivery mechanism<sup>52,53,54</sup>, calcium from a soy beverage may be up to 25% less absorbed than calcium from cow’s milk<sup>55</sup>.

Regardless of whether or not a particular food system is optimized for bioavailability of a nutrient, calcium-fortified beverages suffer from the additional technological challenge of keeping the calcium in suspension – an issue addressed in both the scientific literature as well as in the technical communications of fortificant suppliers to the food

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<sup>50</sup> Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans, 2010. Part D. Section 2: Nutrient Adequacy, p D2-1.

<sup>51</sup> Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans, 2010. Part D. Section 4: Protein p D4-20.

<sup>52</sup> Heaney, R. P., K. Rafferty, and J. Bierman. 2005. Not all calcium-fortified beverages are equal. *Nutrition Today* 40:39-44.

<sup>53</sup> Heaney, R. P., K. Rafferty, M. S. Dowell, and J. Bierman. 2005. Calcium fortification systems differ in bioavailability. *Journal of the American Dietetic Association* 105:807-809.

<sup>54</sup> Zhao, Y., B. R. Martin, and C. M. Weaver. 2005. Calcium bioavailability of calcium carbonate fortified soymilk is equivalent to cow’s milk in young women. *Journal of Nutrition* 135:2379-2382.

<sup>55</sup> Heaney, R. P., M. S. Dowell, K. Rafferty, and J. Bierman. 2000. Bioavailability of the calcium in fortified soy imitation milk, with some observations on method. *American Journal of Clinical Nutrition* 71:1166-1169.

industry<sup>56,57,58,59,60</sup>. As a result, the fortificant has a tendency to settle out to the bottom of the container. Therefore, it is irrelevant if calcium bioavailability for two products is equivalent, if the fortificant is not actually being consumed. Even with vigorous shaking, significant amounts (as much as 80%) of the calcium in a fortified soy or rice beverage may remain as sediment in the bottom of the container<sup>61</sup>.

Considering the wide variety of fortification levels, chemical forms (see Table 1 attached), and product formulations of non-dairy beverages, as well as the influence these variables have on nutrient stability and bioavailability, these non-dairy alternatives are not equivalent to milk. Further, it is misleading and deceptive to the consumer, especially when the level of fortification and marketing of the product suggest they serve as a substitute for dairy milk. A consumer may think he or she is both ingesting and absorbing an amount of calcium declared on the nutrition label that is comparable to dairy milk, but the actual amount would be measurably less.

The name of a food as it appears on the front of the package conveys information to the consumer about the nature of the product. Preliminary consumer survey data indicates that consumers think non-dairy alternatives with the term “milk” in their name contain vitamins and minerals that are equivalent to what is present in dairy milk. When consumers see a product with the term “milk” in its name, and when the label indicates the product is enriched with the same nutrients as milk, and the product is recommended as a substitute for milk, it is deceptive and misleading when the nutrient profile of the product is not equivalent to dairy milk. This was acknowledged by the DGAC in their discussion of non-dairy alternatives: *“A lot of the things, like soy milk and rice milk and the alternatives, don’t have the same nutrient composition (as milk). So, make sure people understand that.”*<sup>62</sup>

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<sup>56</sup> Heaney, R. P., K. Rafferty, and J. Bierman. 2005. Not all calcium-fortified beverages are equal. *Nutrition Today* 40:39-44.

<sup>57</sup> 2002. The challenge of calcium fortification in beverages *in* *Innovations in Food Technology*. Jungbunzlauer, Issue 14, p 26-28.

<sup>58</sup> Munchbach, M. and G. Gerstner. 2010. Calcium fortification in dairy products. *Food Marketing & Technology*. February issue, p 4-8.

<sup>59</sup> Gerstner, G. 2004. Feasibility of calcium fortification in dairy and soy drinks. *Wellness Foods Europe*. October/November issue, p 24-29.

<sup>60</sup> Wade, M. A. 2004. Calcium: The chosen form. *Prepared Foods*. May issue.

<sup>61</sup> Heaney, R. P., and K. Rafferty. 2006. The settling problem in calcium-fortified soybean drinks. *Journal of the American Dietetic Association* 106:1753.

<sup>62</sup> Slavin, J. Archived recordings of the Sixth (Final) Meeting of the 2010 Dietary Guidelines Advisory Committee May 12, 2010. From audio transcript Section 2, 2:16 (hr:min).

Although the 2010 DGAC Report states that products fortified with calcium, vitamin A, and vitamin D are suitable alternatives to dairy milk, the 2010 DGAC Report also concluded that those who omit dairy products from their diets may be deficient, not only in calcium, vitamin A, and vitamin D, but also protein, potassium, and magnesium<sup>63</sup>. It raises the question as to how a non-dairy product would be determined to be a suitable alternative for milk. In fact, the National School Lunch Program and the National School Breakfast Program stipulate fortification levels for nine nutrients if a beverage is to substitute for milk (7 CFR 210 and 220). However, regardless of the amount of fortification, no formulated product will ever equate to the complex mixture of peptides, oligosaccharides, and other nutrients that comprise milk.

NMPF recognizes the many health benefits of including calcium in the diet. NMPF also recognizes that many people may opt not to consume dairy products for any of a number of reasons. However, it is essential that consumers clearly understand that non-dairy alternatives are not nutritionally equivalent to the unique nutrient package represented by dairy foods – a concept that preliminary survey data would indicate is not understood by most consumers. The term used to describe the food is one significant way to communicate that information to the consumer, which is why standardized dairy terminology should not be used with these products. By referring to these alternatives with dairy terminology (i.e., “milk”, “yogurt”), the Dietary Guidelines would be furthering the misconception that these non-dairy foods have identical nutrient profiles to their dairy counterparts.

Summary:

- The names of non-dairy alternatives referenced in the 2010 Dietary Guidelines should reflect current regulations and standards of identity. Suitable names for these non-dairy products may include “soy beverage”, “rice beverage”, “cultured soy gel”, etc., but should not include the names of standardized dairy products.
  - The names of foods referenced in the 2010 Dietary Guidelines should not mislead the consumer as to the nutrient content of the product by inaccurately equating them to standardized dairy products.
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<sup>63</sup> Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans, 2010. Part D. Section 4: Protein, p D4-19.

## **Incorrect Conclusion on Dairy Consumption and Prostate Cancer.**

With respect to the consumption of dairy products, the majority of the 2010 DGAC Report focused on the positive health benefits and the unique nutrient package represented by milk; however some comments in the 2010 DGAC Report could prove harmful to consumer health if carried into the messages of the 2010 Dietary Guidelines. Specifically, the 2010 DGAC Report cites a 2007 report from the World Cancer Research Fund and the American Institute for Cancer Research (WCRF/AICR) saying, “*there is limited evidence suggesting that high consumption of milk and dairy products is a cause of prostate cancer.*”<sup>64</sup> To clarify, the findings of the WCRF/AICR Panel specified that “*diets high in calcium are a probable cause of prostate cancer*”<sup>65</sup>. The association with risk of prostate cancer is related to increased consumption of a single nutrient, not moderate consumption of an entire food group. This has been further confirmed by research demonstrating that non-dairy calcium intake – calcium from tofu, vegetables, and grains – is associated with increased risk of prostate cancer<sup>66</sup>. While increased cancer risk may be correlated to certain dietary patterns or lifestyle behaviors, considering the strength of the current evidence, it is inaccurate to state that dairy products cause prostate cancer, an illness for which there are many contributing factors. In fact, earlier in the 2010 DGAC Report, in the analysis of calcium and health-related outcomes, the DGAC concluded, “*Evidence on other health-related outcomes, such as... prostate and pancreatic cancer ... is too insufficient or inconsistent to permit strong conclusions.*”<sup>67</sup>

Considering that current dairy product consumption is below recommended levels and, therefore, nutrients in addition to calcium (vitamins A and D, potassium, phosphorus, and magnesium) are lacking in current dietary intake patterns, this type of inaccurate messaging could result in further decreases in consumption of dairy products and the essential nutrients they provide. From a public health perspective, rather than developing messages that may result in some consumers completely and unnecessarily eliminating an entire food group from their diets or reducing intake of a single nutrient, it would be better to encourage consumption of a variety of nutrient-dense foods to meet recommended intake levels of essential nutrients for overall health and well-being.

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<sup>64</sup> Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans, 2010. Part D. Section 4: Protein, p D4-20.

<sup>65</sup> World Cancer Research Fund/American Institute for Cancer Research. 2007. Food, Nutrition, Physical Activity, and the Prevention of Cancer: A Global Perspective. AICR, Washington, DC.

<sup>66</sup> Butler, L. M., A. S. Wong, W.-P. Koh, R. Wang, J.-M. Yuan, M. C. Yu. 2010. Calcium intake increases risk of prostate cancer among Singapore Chinese. *Cancer Research*. 70: 4941-4948.

<sup>67</sup> Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans, 2010. Part D. Section 2: Nutrient Adequacy, p D2-30.

### Summary:

- The 2010 DGAC Report inaccurately identified consumption of dairy products as a cause of prostate cancer. This is not reflective of the sum of scientific knowledge in this area and should not be included in the messages of the 2010 Dietary Guidelines.
  - The 2010 Dietary Guidelines should not include messaging that might discourage consumption of nutrient-dense foods groups and the essential nutrients they provide.
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### **Dietary Guidelines Should Reflect Current Scientific Knowledge and Health Benefits of Consuming Prebiotics and Probiotics.**

A brief section of the 2010 DGAC Report is devoted to health benefits related to consumption of probiotics and prebiotics<sup>68</sup>. Probiotic bacteria and prebiotic ingredients are increasingly incorporated into foods with the intent to provide a health benefit beyond traditional nutrient requirements and either improve the health and well-being of or reduce the risk of disease for the consumer. NMPF will address a few specific points related to the 2010 DGAC Report discussion of the topic that may be developed into messaging in the 2010 Dietary Guidelines.

First, the 2010 DGAC Report defines probiotics as “*viable microorganisms, sufficient amounts of which reach the intestine in an active state and thus exert positive health effects (De Vrese, 2008).*” The definitions proposed for probiotics have varied widely since the term was first introduced in the 1950s; however, the most scientifically accepted definition of probiotic was advanced by a consensus conference convened by the FAO/WHO in 2001. That definition is “*probiotics are live microorganisms which when administered in adequate amounts confer a health benefit on the host*”<sup>69</sup>. This definition has been accepted by the scientific community and has also been recognized by the International Scientific Association for Probiotics and Prebiotics (ISAPP), a non-profit, scientific organization dedicated to advancing the science of probiotics and prebiotics. An important distinction between the FAO/WHO definition and the one cited in the 2010

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<sup>68</sup> Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans, 2010. Part D. Section 5: Carbohydrates, p D5-40 through D5-42.

<sup>69</sup> FAO/WHO. 2002. Joint FAO/WHO Working Group Report on Drafting Guidelines for the Evaluation of Probiotics in Foods. London, Ontario. ([http://www.who.int/foodsafety/fs\\_management/en/probiotic\\_guidelines.pdf](http://www.who.int/foodsafety/fs_management/en/probiotic_guidelines.pdf)).

DGAC Report is that the former does not limit the action site of probiotics to the intestine of the host. It is also important to note that probiotics are microorganisms often added to foods (like yogurt). Yogurt itself is *not* a probiotic (unlike what is stated in the 2010 DGAC Report), rather, it is a food that may *contain* probiotic microorganisms – if those organisms have been demonstrated to provide health benefits. These are important distinctions that should be made and references to probiotics in the 2010 Dietary Guidelines should use the accepted, scientific definition of the term.

Second, the 2010 DGAC Report defines prebiotics as “*a non-digestible food ingredient that beneficially affects the host by selectively stimulating the growth and/or activity of one or a limited number of bacteria in the colon, and thus improves host health (De Vrese, 2008).*” The most current, scientifically-accepted definition for the term is “*prebiotics are non-digestible (by the host) food ingredients that have a beneficial effect through their selective metabolism in the intestinal tract*”<sup>70</sup>. Additionally, it is important to clarify that prebiotics are not the same as fiber (as is implied in the text of the 2010 DGAC Report). Although they may reach the large intestine without being digested, non-starch polysaccharides (i.e., fiber) are not necessarily prebiotics. Prebiotics are selectively fermented by beneficial members of the gut microbiota. In addition, while the 2010 DGAC Report mentions that specific foods (wheat, onions, garlic) can be sources of prebiotics (i.e., inulin), the Report neglects the fact that it would require consumption of excessive amounts of these foods to equate to the amounts of prebiotics for which health benefits have been demonstrated in human feeding studies.

Finally, the 2010 DGAC Report states that no cohort studies have linked higher levels of bifidobacteria or lactobacillus in feces to improved health status and that no recommendations for probiotic intake can be made. It is unclear as to why the DGAC specified increased fecal counts of bacteria as the biomarker necessary to confirm the health benefits of probiotics. Populations of bacteria in the stool are not necessarily reflective of the microorganisms that are present in or have taken residence throughout the length of the gastrointestinal tract. Further, probiotic bacteria do not necessarily have to be alive in the feces to have demonstrated a health benefit (i.e., their probiotic action could have taken place in the gastrointestinal tract prior to their death and excretion with the feces). Regardless of the selection of biomarker, scientific knowledge in the area of probiotic research is rapidly increasing, and there currently exists a large amount of scientific information from controlled human studies that provide evidence of

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<sup>70</sup> Gibson, G. R., H. M. Probert, J. A. E. van Loo, R. A. Rastall, and M. B. Roberfroid. 2004. Dietary modulation of the human colonic microbiota: Updating the concept of prebiotics. *Nutrition Research Reviews*. 17:259-275.

higher levels of bifidobacteria and lactobacilli being associated with health benefits. (See texts for reviews in this area<sup>71,72,73,74</sup>.)

Additionally, it is important to note that health benefits of probiotics are strain-dependent. While over 80% of the commercial yogurts sold (both cup and drinkable styles) in the United States contain microorganisms beyond the required starter cultures<sup>75</sup>, not all of these strains have demonstrated clinical health benefits. Therefore, not all dairy products with added cultures could be said to contain probiotics. Health benefits of probiotics are also dependent upon the matrix, the product or form in which the probiotic is delivered<sup>76</sup>. Among foods clinically studied as vehicles for probiotics, the most documentation exists for unfermented or fermented dairy products. Research has demonstrated dairy ingredients and milk components can improve probiotic survival during shelf-life, making dairy products an excellent delivery vehicle for probiotics. Therefore, although meta-analyses provide a cumulative view on probiotic efficacy, these reports are limited because the reviewed studies are not standardized and, in most cases, pooled studies used different strains. These factors may account for the inconsistencies observed among the studies reviewed by the DGAC. A more extensive review of the scientific literature on health benefits of probiotics, separated by strain, may provide additional evidence supporting a recommendation for consumption of probiotic microorganisms.

#### Summary:

- The 2010 Dietary Guidelines should use definitions of “probiotic” and “prebiotic” that have been widely acknowledged by the scientific community to assure meaningful interpretation commercially, clinically, and scientifically.
  - The 2010 Dietary Guidelines should recognize the scientific evidence linking probiotics with health benefits, acknowledging these benefits are strain- and matrix-dependent.
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<sup>71</sup> Charalampopoulos D. and R. A. Rastall (ed.). 2010. Prebiotics and Probiotics Science and Technology. Springer.

<sup>72</sup> Gibson, G. R. and R. A. Rastall (ed.). 2006. Prebiotics: Development and Application. John Wiley & Sons Ltd., Chichester.

<sup>73</sup> Tannock, G. (ed.). 2002. Probiotics and Prebiotics. Caister Academic Press, Norfolk.

<sup>74</sup> Versalovic, J. and M. Wilson (ed.). 2008. Therapeutic Microbiology. ASM Press, Washington, DC.

<sup>75</sup> Probiotic dairy products lack scientific support, Foodqualitynews.com.

<sup>76</sup> Sanders, M. E. and M. L. Marco. 2010. Food formats for effective delivery of probiotics. Annual Review of Food Science and Technology. 1: 65-85.

## **Availability of Scientific Information.**

NMPF has been frustrated at the apparent lack of transparency around the Dietary Guidelines process and disappointed that our request for an extension of the comment period appears to have not been granted (see July 1, 2010 Comment #001339). Specifically, key documents were not accessible through the Nutrition Evidence Library (NEL) either during the discussions of the DGAC or immediately upon release of the 2010 DGAC Report. Not all relevant information was made available through the NEL until a week before the conclusion of the comment period providing little time to review the volume and complexity of the scientific evidence contained therein.

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## **Conclusions.**

The challenge to overcome the obesity epidemic is significant; the issue is multifactorial and will require a concerted effort and change on the part of many consumers as well as in food manufacture and food service. Poor-quality diets have furthered excessive weight gain and increased incidence of chronic diseases in the United States. Therefore, the 2010 DGAC Report repeatedly *“encourages all stakeholders to take actions to make every choice available to Americans a healthy choice”*<sup>77</sup>.

NMPF agrees that when a choice exists between foods of similar positive nutrient benefits, the “healthy choice” is the food with fewer calories and less added solid fats, sugars, and sodium; however, choices are rarely this straightforward. A healthy choice cannot always be identified by calories or added fats, sugars, and sodium. Food choices need to be evaluated in terms of their entire nutrient and caloric packages and their potential contribution to and impact on the diet as a whole. The 2010 DGAC Report focused much of its message around “avoidance” of specific foods or components – portraying foods as either “good” or “bad”. However, casting a negative shadow on nutrient-rich foods – simply because of small amounts of added sugars, solids fats, or sodium – could further the nutrient imbalance among Americans by discouraging consumption of these nutrient-rich food groups altogether.

The DGAC was often conflicted in only recommending foods in their most nutrient-dense form (without added fats, sugars, or sodium) while trying to maintain flexibility to

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<sup>77</sup> Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans, 2010. Part B. Section 3: Translating and Integrating the Evidence, p B3-8.

address consumers' preferences – for example (in discussing dairy product consumption), “(if) *some people don't want skim milk, they won't drink any milk. I don't want to be so restrictive that people don't drink milk*”<sup>78</sup>. While the “healthy choice” between skim milk and reduced-fat milk is skim milk, the reduced-fat option is preferable if the consumer would forgo drinking milk (and therefore miss the essential nutrients it provides) entirely.

NMPF requests that, as the Departments develop the Dietary Guidelines, recognition is given to the unique nutrient package that dairy products provide and to the importance of providing nutrients in a form that is acceptable and available to Americans. Nutrient-dense dairy foods (including low-fat and fat-free flavored milk, sugar-sweetened low-fat and fat-free yogurt, and reduced-fat cheese), when consumed in moderation, can serve as important sources of nutrients. The dairy industry will continue to strive to improve the nutrient quality of dairy foods so that Americans are able to make every choice a healthy choice.

Please contact NMPF if you would like any additional information.

Sincerely,

A handwritten signature in cursive script that reads "Beth Panko Briczinski".

Beth Panko Briczinski, Ph.D.  
Director, Dairy Foods & Nutrition

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<sup>78</sup> Archived recordings of the Sixth (Final) Meeting of the 2010 Dietary Guidelines Advisory Committee May 12, 2010. From audio transcript Section 2, 2:22 (hr:min).

Table 1. Market Basket Survey: Nutrient Composition of Misbranded Non-Dairy Plant-Based Beverages Compared to Lowfat Milk.

Shaded cells indicate a lack of nutritional equivalence (greater amount of sodium or calories; lesser amounts of other essential nutrients) of the non-dairy beverages compared to lowfat milk.

Products <sup>1</sup>	Nutrient Composition (per serving)											
	Calories	Protein (g)	Sodium (mg)	Potassium (mg)	Vitamin A (%DV)	Calcium (%DV)	Calcium Fortificant <sup>2</sup>	Vitamin D (%DV)	Phosphorus % DV)	Riboflavin (%DV)	Vitamin B-12 (%DV)	Magnesium (%DV)
<i>Milk<sup>3</sup> lowfat, 1%, with added vitamin A and vitamin D</i>	102	8	107	366	10	30	na	32	23	27	18	7
<b>Soy-Based Beverages</b>												
365 Everyday Value™ Original Soymilk	90	6	110	350	10	30	CC	30	8	40	50	8
8th Continent® Original Regular Soymilk	80	8	95	360	10	30	CP	25	25	30	20	6
Archer Farms® Plain Soymilk	100	7	120	ns <sup>4</sup>	10	30	CC	30	ns	30	50	ns
Edensoy® Original Soymilk	140	11	105	440	0	10	CC	ns	15	6	ns	15
Harris Teeter® Vanilla Organic Soymilk, Ultra-Pasteurized	90	7	130	300	10	30	CC	30	ns	30	50	ns
Nature's Promise® Vanilla Organic Soymilk, Ultra-Pasteurized	90	7	130	300	10	30	CC	30	ns	30	50	ns
Pearl® Original Organic Soy Milk	110	7	110	300	20	30	CP	35	ns	ns	ns	ns
Silk®, Original, Plain Soymilk (Natural)	100	7	120	300	10	30	CC	30	ns	30	50	10
Soy Dream® Classic Original Soymilk	130	7	150	140	0	4	na	ns	ns	ns	ns	15
Trader Joe's® Original Organic Soy Milk	90	7	70	290	10	30	CC	30	ns	30	50	ns
Vitasoy® Plain Soymilk	110	7	160	320	6	30	CC	20	20	20	15	10
WestSoy® LowFat Plain Soymilk Drink	80	4	90	150	10	20	CP	25	15	ns	ns	ns
Wild Harvest® Original Soy Milk	100	6	160	ns	10	30	CC	ns	ns	ns	ns	ns
WildWood™ Plain Organic Soymilk	90	7	70	290	20	30	CC	30	10	40	50	10

Products <sup>1</sup>	Nutrient Composition (per serving)											
	Calories	Protein (g)	Sodium (mg)	Potassium (mg)	Vitamin A (%DV)	Calcium (%DV)	Calcium Fortificant <sup>2</sup>	Vitamin D (%DV)	Phosphorus % DV)	Riboflavin (%DV)	Vitamin B-12 (%DV)	Magnesium (%DV)
Milk <sup>3</sup> lowfat, 1%, with added vitamin A and vitamin D	102	8	107	366	10	30	na	32	23	27	18	7
ZenSoy Plain Soy Milk	110	7	80	ns	10	30	CC	30	ns	30	50	ns
<b>Rice-Based Beverages</b>												
Good Karma Foods Organic Original Whole Grain <sup>®</sup> Ricemilk	100	1	140	ns	10	25	CP	25	15	ns	25	ns
Wild Harvest <sup>®</sup> Original Rice Milk	100	0	90	ns	10	30	CP	ns	ns	ns	ns	ns
B.R.A.T. <sup>™</sup> Organic Original Ricemilk	100	1	130	ns	10	30	CL	10	ns	ns	10	ns
Nature's Promise <sup>®</sup> Vanilla Enriched Ricemilk	120	0	95	ns	10	30	CP	30	15	30	50	ns
Harris Teeter <sup>®</sup> Naturals Vanilla Ricemilk	120	0	95	ns	10	30	CP	30	15	30	50	ns
Cereal Match <sup>®</sup> Rice Milk	100	1	50	120	10	10	CL	10	ns	ns	ns	ns
<b>Almond-Based Beverages</b>												
Silk <sup>®</sup> Pure Almond <sup>™</sup> Original Almondmilk	60	1	150	150	10	30	CC	25	6	2	ns	4
Blue Diamond <sup>®</sup> Almond Breeze <sup>®</sup> Refrigerated Original Almondmilk	60	1	150	180	10	30	CC	25	2	2	ns	4
<b>Hemp-Based Beverages</b>												
Pacific <sup>™</sup> Foods Hemp Milk Original	160	4	130	170	10	50	CP	30	30	35	25	25
Living Harvest <sup>®</sup> Foods Tempt <sup>™</sup> Original Hempmilk	100	2	25	ns	10	40	CP	20	20	25	20	15
Original Hemp Bliss <sup>®</sup> Organic Hempmilk	110	5	95	ns	0	2	na	ns	ns	ns	ns	ns
Signs & Wonders <sup>®</sup> Peanut Milk	110	3	15	91	0	0	na	ns	ns	ns	ns	ns

<sup>1</sup>The list of products is not exhaustive, because of numerous varieties of each brand. Products are representative in terms of what is currently available. When multiple products were manufactured under a single brand name, when possible, the product selected was that which was most comparable to the dairy product (i.e., plain, unsweetened varieties).

<sup>2</sup> Abbreviations for type of calcium fortificant:

na = not applicable (no exogenous calcium fortificant)

CC = calcium carbonate

CP = calcium phosphate or tricalcium phosphate

CL = calcium lactate

<sup>3</sup> Values obtained from USDA National Nutrient Database for Standard Reference ([www.ars.usda.gov](http://www.ars.usda.gov)).

<sup>4</sup> ns = "not specified" These nutrients are not required to appear on the nutrition information panel. However, it should be noted that the products are not fortified with these nutrients, and therefore are not likely a significant source.

Table 2. Market Basket Survey: Nutrient Composition of Misbranded Non-Dairy Foods (Yogurt Analogs) Compared to Lowfat Yogurt.

Shaded cells indicate a lack of nutritional equivalence (greater amounts of sodium or calories; lesser amounts of other essential nutrients) of the non-dairy foods compared to lowfat yogurt.

Products <sup>1</sup>	Nutrient Composition (per serving)										
	Calories	Protein (g)	Sodium (mg)	Potassium (mg)	Vitamin A (%DV)	Calcium (%DV)	Vitamin D (%DV)	Phosphorus (% DV)	Riboflavin (%DV)	Vitamin B-12 (%DV)	Magnesium (%DV)
Yogurt <sup>2</sup> , plain, lowfat, 12 g protein per 8 oz.	154	8	104	352	4	28	1	21	19	15	7
<b>Yogurt Analogs</b>											
Wildwood™ Soyogurt, Unsweetened, Plain	110	7	53	320	0	27	0	13	11	0	11
Ricera™ Vanilla Rice Yogurt	180	4	213	93	27	27	27	ns	ns	ns	ns
Stonyfield O'Soy Organic Vanilla Soy Yogurt	150	9	53	413	3	20	ns	13	13	0	13
Silk® Live!® Vanilla Soy Yogurt	150	7	27	ns	0	40	ns	ns	ns	ns	ns
Whole Soy & Co.® Plain Soy Yogurt	190	11	20	ns	3	47	ns	ns	ns	ns	ns

<sup>1</sup>The list of products is not exhaustive, because of numerous varieties of each brand. Products are representative in terms of what is currently available. When multiple products were manufactured under a single brand name, when possible, the product selected was that which was most comparable to the dairy product (i.e., plain, unsweetened varieties).

<sup>2</sup>Values obtained from USDA National Nutrient Database for Standard Reference ([www.ars.usda.gov](http://www.ars.usda.gov)).

<sup>3</sup>ns = "not specified" These nutrients are not required to appear on the nutrition information panel. However, it should be noted that the products are not fortified with these nutrients, and therefore are not likely a significant source.