

Finding Whole Grains and Calcium Rich Food Sources on Supermarket Shelves

Heidi Montgomery, M.S.

Mary Schroeder, M.S., R.D.

Ruth Inglis-Widrick

Laura Young, M.S.

Garry W Auld, Ph.D., R.D. (corresponding author)

Abstract

National food intake data has demonstrated that the typical American diet is lacking in whole grain and calcium rich food sources, both of which offer several health benefits. To help practitioners educate consumers on the availability of whole grain and calcium rich food sources, a study of food products offered at a traditional supermarket and a natural foods supermarket was conducted. Comparisons were made between the nutritional quality of whole and non-whole grain items as well as traditional and alternative dairy products. The proportion of whole grain items available to consumers in most food categories that account for a substantial portion of the diet was strikingly limited. The majority of whole grains were wheat- or oat-based. As a result of volunteer fortification, a wide variety of calcium-containing food products are available to consumers. Yet, consumers must be advised that alternative calcium sources may not be nutritionally comparable to traditional dairy products.

Key Words: whole grains; calcium; supermarket

Introduction

Two areas of the American diet repeatedly shown to be lacking, based on national food intake data, are the consumption of whole grain and calcium-containing food products. Despite the recommendation by the Dietary Guidelines for Americans, 2000, to “choose a variety of grains daily, especially whole grains,” American adults are consuming, on average, one whole grain serving daily (U.S. Department of Health and Human Services 2000, Cleveland et al. 2000). Similarly, data from the U.S. Department of Agriculture Continuing Survey of Food Intakes by

Individuals (CSFII) 1994-96 show that only 12 percent of girls and 32 percent of boys, ages 12-19, and 16 percent or less of women above 20 years of age are meeting 100 percent of the current recommendation for calcium intake (U.S. Department of Agriculture 2001). Further, less than 15 percent of mature men and women consume 100 percent of calcium recommendations (U.S. Department of Agriculture 2001).

Both whole grain and calcium-containing food products have been shown to offer several health benefits and thus should have a significant role in the American diet. Recent research suggests that consuming a variety of whole foods, such as whole grains, fruits, and vegetables, provides greater benefits than consuming specific components of these foods. Eating a variety of whole foods (not specific nutrients) is associated with decreased risk of total mortality (Kant, Schatzkin, and Ziegler 1995). Similarly, whole grains, rather than a specific component of grains, may confer greater disease prevention benefits for several conditions: all cause mortality, coronary heart disease, type II diabetes, and certain types of cancer (Jacobs et al. 2000, Anderson et al. 2000, Liu et al. 1999, Liu et al 2000, Jacobs et al. 1998, Chatenoud et al. 1998).

Yet, while the Dietary Guidelines for Americans, 2000, advise consumers to eat at least several whole grain servings per day, and recent research has demonstrated health benefits from whole grains above and beyond their fiber content, people are frequently consuming non-whole grain products (Jacobs et al. 2000, Guthrie and Morton 2000). Reported reasons for not choosing whole grains include a lack of understanding of the health benefits offered by whole grains, inability to identify whole grains in the store, taste, preparation time, and availability (Adams and Engstrom 2000).

With regard to calcium, it is well established that adequate calcium intake is necessary for bone health and health of other body systems (Institute of Medicine 1997). Recent studies have demonstrated a positive association between adequate calcium intake and a reduced risk for many chronic diseases including osteoporosis, hypertension, and colorectal cancer (Miller, Jarvis and McBean 1999, Zemel et al. 2000). Calcium also may be beneficial in weight management (Zemel et al. 2000).

The National Institutes of Health and other health organizations recommend that calcium needs be met through a varied diet (National Institutes of Health 1998, National Institute of Child Health and Human Development 1998). Nevertheless, milk, cheeses, and other dairy foods have always been the predominant source of calcium in the American diet, contributing approximately 75 percent of calcium intake from food (U.S. Department of Agriculture 2001). Others have confirmed this finding: milk and milk products supply 83 percent of dietary calcium for young children, 77 percent for teenage girls, and between 65 percent and 72 percent for adults (Fleming and Heimbach 1994). Today, however, voluntary calcium fortification of a variety of foods,

including alternative dairy products, such as soy or rice milk, fruit juices, and ready-to-eat-cereals, has expanded the number of potential calcium sources in the American diet.

As part of a larger analysis of the quality and kinds of food products currently available to consumers, both whole grain and calcium-containing food products were segmented and analyzed at a traditional supermarket (TS) and a natural foods supermarket (NFS). Researchers compared the proportion of whole grain items available in various grain-based food categories at each store. In addition, whole grain items were compared with non-whole grain items, based on the following variables: sugar, fat, and fiber content; fat calories; price; presence of partially hydrogenated oils; and whether or not the item was organic. For calcium-containing food products, a comparison of the nutrient profiles of traditional and alternative dairy products was made. Additionally, potentially significant sources of calcium were identified at the TS and NFS by determining the proportion of products in various food categories that provide less than 10 percent (less than 100mg calcium), 10 –19 percent (100-190 mg calcium), and 20 percent or greater (200mg calcium or greater) of the Daily Value (DV) for calcium (U.S. Food and Drug Administration 2001). These analyses are intended to provide practitioners insight into instructing consumers to identify and select higher quality whole gain and calcium-containing food products so that consumers may gain the health benefits provided by these two types of food products.

Methods

Data were gathered at a traditional supermarket chain and a large natural foods supermarket in Northern Colorado. Both supermarkets represented national chain stores. The TS (56,000ft²) and NFS (26,400 ft²) stocked approximately 8,600 and 4,590 different food items, respectively. Data was collected between August and November 2000 for the TS and between January and April 2001 for the NFS. Limited availability of research assistants required data collection at the TS and NFS to occur at separate times. However, due to the volume of items for which data was collected, we do not believe that separate data collection times altered the outcome of this study. Initially, a tally count of all food items was created. Only items that potentially would account for a significant portion of an individual's diet (serving size ≥ 2 T) were included. Twenty food categories and several sub-categories were created based on how foods were grouped on store shelves and/or the Food Guide Pyramid (U.S. Department of Agriculture 1995). Examples of categories were breads, dairy, dairy alternatives, and breakfast food items. Examples of subcategories were ethnic breads, sweet breads, other breads, cheeses, alternative cheeses, and breakfast cereals. Items that differed by manufacturer, package size, and/or ingredients or flavor were counted separately.

At least 20 percent of all categorized store food items were sampled. For categories containing 100 items or more, every fifth item on the shelves was sampled. For categories having less than

100 items, the proportion needed to reach 20 selections was determined (e.g., 25 percent of 80 items). A roll of a die generated random numbers to begin sampling. The first food item for each category was selected by counting from the upper left-hand corner; sampling was then done systematically across the shelf row from left to right, then top to bottom. For each item, the pre-determined category classification, item name, manufacturer, package size, unit price, first five ingredients, and the 16 variables on the Nutrition Facts panel were recorded. An item was considered “whole grain” if the first ingredient was a whole grain (e.g., whole wheat or oats) (Liebman 1997).

Data management and statistical calculations were conducted using Microsoft Access for Windows (1985-1999, Microsoft Corp, Redmond, WA.) and SPSS for Windows (Release 9.0, 1999, SPSS Inc., Chicago, IL.) Statistical significance was set at $p < 0.05$. For grain products, Chi square analysis was used to examine the proportion of whole grain foods available to consumers at each supermarket and t tests were used to examine differences between nutrient profiles of whole grain and non-whole grain products and between whole grain products at the two types of stores. For calcium-containing products, t tests were used to examine differences between nutrient profiles of traditional dairy products and alternative dairy products, and Chi square analysis was used to examine the proportion of foods available to consumers considered to be poor (< 10 percent DV), good (10-19 percent DV) or excellent (≥ 20 percent DV) sources of calcium.

Results

Grain products

At the TS, cereal, low-fat snacks (pretzels, rice and corn cakes) and cereal bars were found to have the highest proportion of whole grain choices – 54 percent, 53 percent, and 38 percent of items sampled, respectively (Table 1). Only 4 percent of breads and none of the pasta or non-cereal breakfast foods (waffle and pancake mixes, frozen waffles) sampled at the TS were whole grain. At the NFS, cereal also ranked highest in whole grain items at 76 percent of items sampled. Half or more of breads, low fat snacks, and ethnic breads sampled were whole grain while 16-20 percent of samples in other categories were whole grain.

The NFS had significantly higher proportions of whole grain choices than the TS in the categories of breads, cereals, ethnic breads, and pasta. These results likely overestimate the amount of 100 percent whole grain items, as items were counted as whole grain if the first ingredient was a whole grain even though many of these products also contained refined flours in the top five ingredients.

Several differences were found when comparing whole grain items in the two store types (Table 2). The NFS had higher proportions of items that were organic, and its whole grain cereals contained more sugar. Whole grain cereal bars at the TS had higher levels of fat and calories from fat, but lower levels of sugar and fiber. Prices of whole grain items did not differ between stores except in the cereal bars category. (Those in the NFS cost more).

Regarding the types of whole grains found, only two whole grain breads were sampled at the TS, and both were whole wheat. At the NFS, 62 percent of the whole grain breads were wheat, 23 percent were spelt, and the remaining were one or a combination of rye, kamut, barley amaranth, barley, or quinoa. Sampled cereals were mostly made with oats – 60 percent at the TS and 69 percent at the NFS. Of the remaining whole grain cereals, 30 percent were wheat at the TS and 10 percent were wheat at the NFS, with the remainder containing similar alternative grains as the breads. Whole grain crackers at both stores were wheat, rye, and rice. Whole grain pastas (found only at the NFS) were mostly wheat with some rice. Cereal bars sampled were wheat (50 percent NFS), oats (100 percent TS), or rice (50 percent NFS). Thus, for both stores, the greatest whole grain variety was exhibited in the cereal category while wheat tended to be the norm for the other categories.

Whole grain products had approximately twice as much fiber as non-whole grains in the cereals and cereal bars categories, and more than twice the amount of fiber in the breads, ethnic breads, and cracker categories (Table 2). Whole grain cereals tended to be higher in fat, though they had fewer items with partially hydrogenated oils in the first five ingredients. We speculate that the higher fat content is partially due to the seeds and nuts, which were often found in the whole grain cereals. There were no significant price differences found between whole grain and non-whole grain items.

Calcium containing products

Comparisons between traditional and alternative dairy products are presented in Table 3. Dairy and non-dairy milk had similar caloric and vitamin A contents, but varied more on calcium content (dairy milk = 29 percent DV calcium/serving vs. non-dairy milk = 18 percent DV/serving). On average, dairy milk had significantly more fat, saturated fat, and protein.

Profiles of calories, calcium, and vitamin A were similar for dairy and non-dairy yogurts (Table 3), though the large standard deviation for calcium in non-dairy yogurts may have masked a difference. Dairy yogurt had significantly more saturated fat and protein, but less fat.

Dairy and non-dairy cheeses had similar protein, vitamin A, and calcium contents (Table 3). Dairy cheese contained significantly more fat, saturated fat, and calories than non-dairy cheese.

The amount of calcium (according to the percent DV) in various food categories at the traditional and natural foods supermarkets is shown in Table 4. At the TS, over half of sampled items were either good or excellent sources of calcium in the following categories: dairy milk, non-dairy milk, dairy yogurt, dairy cheese, non-dairy cheese, pizza, and energy/sports bars. In these same categories at the NFS, three categories (non-dairy milk, dairy cheese, and non-dairy cheese) had a lower percentage of excellent calcium sources (not always statistically significant), while two categories (pizza and energy/sports bars) had a higher proportion of excellent sources.

At the TS, greater than 50 percent of the products sampled in the categories of ice cream, frozen entrees, pudding, alternative protein, cereal, > 90 percent juice beverages, and < 90 percent juice beverages provided less than 10 percent of the DV for calcium. That was similar at the NFS, where greater than 50 percent of the foods sampled in four of these same food categories (alternative protein, cereal, > 90 percent juice beverages, and < 90 percent juice beverages), as well as in the non-dairy yogurt category also provided less than 10 percent of the DV for calcium. Surprisingly, good or excellent sources of calcium were found in almost 10 percent of the foods sampled in the categories of breads, ethnic breads, sweet breads, cookies, rice, pasta and potatoes, soups, and non-dairy frozen desserts (items typically not looked upon as significant calcium sources).

Significant differences were found in several categories between the quality of calcium sources available at the TS versus the NFS. Fifty-two percent of dairy cheeses at the TS were excellent sources of calcium, compared to 41 percent of dairy cheeses at the NFS. Fifty-three percent of ice creams and 87 percent of puddings sampled at the TS were poor sources of calcium, whereas 83 percent of ice creams and 56 percent of puddings at the NFS were good sources of calcium. One third of breakfast cereals at the TS were good or excellent sources of calcium, while all breakfast cereals sampled at the NFS were poor sources of calcium.

Discussion

Meeting the Dietary Guidelines for Americans, 2000, recommendation to eat a variety of whole grains likely will remain a challenge for consumers (U.S. Department of Health and Human Services 2000). As evident in Table 1, the proportion of whole grain choices available to consumers in most food categories that account for a substantial portion of a typical American diet was strikingly limited. The majority of available whole grain items were wheat, except among cereals or cereal bars, which primarily contained oats. Oat bran, and in particular B glucan, has been shown to have favorable effects on risk factors (LDL cholesterol, total blood cholesterol, and systolic blood pressure) for heart disease (Ripsin et al. 1992, Saltzman et al. 2001). For options beyond these two, consumers will find more variety at a natural foods supermarket. By eating a greater variety of whole grain foods than just wheat and oat products,

consumers will obtain a greater variety of the nutrients and phytochemicals found in whole grains (Jacobs et al. 2000).

Practitioners also need to find ways to encourage consumers to choose more whole grain products. The new authorized label health claim, "Diets rich in whole grain foods and other plant foods and low in total fat, saturated fat, and cholesterol may reduce the risk of heart disease and some cancers" makes some whole grain products easier to find (U.S. Food and Drug Administration 1999). For this claim, whole grain foods are defined as those that contain 51 percent or more of whole grain ingredients by a reference weight customarily eaten (U.S. Food and Drug Administration 1999). However, educating people on how to identify whole grain products via ingredient lists and the food categories most likely to contain whole grain products is also important. In addition, food manufacturers should be urged to develop and market more true whole grain items rather than misleadingly labeled products such as "7 grain" or "100 percent wheat" bread.

A potential barrier to purchasing whole grains is the perception that whole grain products are more expensive. This perception was not supported by the results. Practitioners should inform consumers that price differences might be less than imagined. Additional approaches to encourage whole grain consumption include

- Educating consumers to follow the USDA recommendation to eat several (at least three) servings of whole grains per day (U.S. Department of Health and Human Services 2000)
- Providing cooking and tasting classes targeting whole grains in nutrition education outreach programs like WIC, EFNEP, FSNEP, senior networks, and hospitals
- Providing reasons (to educators and the public) to choose whole/minimally processed grain products, e.g., prevention of heart disease, diabetes, and cancer (Slavin et al. 1999)
- Stressing that fiber and other important phytochemicals found in whole grains might work synergistically to provide health benefits (Jacobs et al. 2000) and
- Developing in-store activities and promotions, e.g., end-of-aisle displays, price promotions, and whole grain store tours.

The number of calcium-fortified food products available in many supermarkets offers a wide variety of potential food sources to meet requirements. However, according to the National Institute of Child Health and Human Development, low-fat cow's milk and milk products are the ideal sources of calcium because they not only supply large amounts of calcium, but also provide other nutrients essential for bone health and human development (National Institute of Health and Human Development 1998). Results from this study indicate that alternative dairy products often do not contain equivalent amounts of two beneficial nutrients: calcium and protein. Consumers should also recognize that several food categories generally assumed to be rich

calcium sources might not be. For example, at the TS, 87 percent of puddings and 54 percent of ice creams sampled were actually poor sources of calcium.

The variation of calcium availability among different foods adds to consumer confusion. Calcium from fortified soymilk is absorbed at only 75 percent the efficiency of calcium from cow's milk, which might further reduce soymilk's effectiveness in meeting calcium needs (Heaney et al. 2000). In fortified juices, Andon and colleagues found that calcium citrate malate was absorbed more efficiently in apple juice than orange juice, likely because of the greater fructose and lower organic acid content of apple juice (Andon et al. 1996).

As with whole grain products, educating consumers on how to identify various food groups and specific foods within those groups that are good or excellent sources of calcium by reading food label claims and ingredient lists is clearly necessary. Meeting the current dietary recommendations for calcium is feasible for all consumers, even those with aversions or allergies to dairy milk and milk products, due to the large variety of calcium-containing foods now available. Alternative dairy and non-dairy calcium-containing food and beverages can be viable and widely available options for individuals who do not meet their calcium requirements through traditional dairy products. However, practitioners must caution consumers that while calcium-fortified foods provide calcium, they may not be nutritionally comparable to traditional dairy products. Individuals choosing to meet their calcium requirement via non-dairy foods must ensure their needs for dairy's other beneficial nutrients (protein, vitamins A and D) are adequately met.

Potential approaches for encouraging consumers to meet their daily calcium requirements include

- Providing a list of good and excellent sources of calcium as well as opportunities to taste traditional dairy, alternative dairy, and non-dairy calcium-containing products during WIC, EFNEP, FSNEP, and other classes
- Focusing on the wealth of additional nutrients that traditional calcium-containing dairy products provide and listing alternate sources of these nutrients and
- Stressing the potential role of calcium-containing dairy products in lowering the risk for colon cancer, controlling high blood pressure, preventing osteoporosis, and managing weight (Institute of Medicine 1997; Miller, Jarvis, and McBean 1999; Zemel et al. 2000).

Conclusion

Based on the results of this study, it is evident that a variety of calcium-containing food products are available to consumers at both traditional and natural foods supermarkets. Whole grain products can also be found at both types of supermarkets, however their availability was

noticeably limited at the traditional supermarket. Yet, despite availability, Americans are not meeting the dietary recommendations for either whole grains or calcium according to previous studies. Thus, nutrition educators are charged with the task of educating consumers regarding the types of whole grain and calcium-containing food products available and how to identify them. Results presented herein may serve as a preliminary guide for finding whole grains and calcium rich food sources on supermarket shelves.

Table 1. Proportion of whole grain (WG) items according to store and food category

Food Category	# WG items / Total # items (%WG)	
	Traditional Supermarket	Natural Foods Supermarket
Breads	2/56 (4%)	13/24 (54%) ***
Cereals	40/74 (54%)	32/42 (76%) *
Cereal bars	6/16 (38%)	4/20 (20%)
Low fat snacks (1)	17/32 (53%)	13/24 (54%)
Ethnic bread (2)	2/21 (10%)	10/20 (50%) **
Crackers	5/46 (11%)	3/19 (16%)
Breakfast food (3)	0/13	3/18 (17%)
Pasta	0/43	8/42 (19%) *

1 Low fat snacks = pretzels, rice and corn cakes

2 Ethnic bread = pita bread, tortillas, taco shells, breadsticks

3 Breakfast food = waffle and pancake mixes, frozen waffles

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ according to Chi square comparisons

Table 2. Characteristics of grain products according to store, food category & whole grain status

	Characteristics and content	Mean (SD)	
		Whole grain items	

Food category (total # of items)		Traditional supermarket	Natural foods store	Both stores	Non-whole grain items (both stores)
Breads (80)	Number of items	2	13	15	65
	Sugar (g)	3 (0)	1.3 (1.7)	2.1 (2.4)	3.0 (2.4)
	Total fat (g)	1.8 (0.4)	0.9 (0.9)	1.0 (0.9)	2 (2)
	Fat calories	17.5 (3.5)	8 (8.1)	9.3 (8.3)	18 (17.7)
	Fiber (g)	3.5 (0.7)	3.1 (1.6)	3.1 (1.5)	1.3 (1.1)****
	Price (\$/lb)	1.5 (0.5)	3.4 (1.3)	3.2 (1.4)	2.4 (2.0)
	Organic (2)	0	12 (50%)	12 (80%)	7 (11%)***
	Hydrog Oils (2)	0	0	0	6 (9%)
Cereals (116)	Number of items	40	32	72	44
	Sugar (g)	3.9 (1.5)	7.5 (4.2) **	9.0 (5.8)	8.0 (5.6)
	Total fat (g)	2.9 (2.6)	3.3 (3.4)	3.1(3)	0.9 (1.0) ***
	Fat calories	26 (22)	30 (29)	27.6 (25.8)	8.8 (8.7) ***
	Fiber (g)	3.9 (1.5)	3.8 (1.4)	3.9 (1.4)	2 (2.8) ***
	Price (\$/lb)	3.8 (1.8)	4.4 (1.9)	4.1 (1.8)	3.8 (1.4)
	Organic (2)	2 (5%)	16 (50%) ***	19 (26%)	6 (5%)
	Hydrog Oils (2)	1 (3%)	0	1 (1.3%)	6 (5%) *
Cereal Bars (36)	Number of items	6	4	10	26
	Sugar (g)	9.8 (1.3)	13 (1.4) **	11.1 (2.1)	13.2 (3.1)
	Total fat (g)	3.6 (0.8)	0 (0) ***	2.4 (2.6)	2.7 (2.4)
	Fat calories	35 (9.5)	0 (0) ***	21 (19.4)	24.6 (20.3)
	Fiber (g)	1.2 (0.4)	3 (0) ***	1.9 (1.0)	1.1 (0.6) **
	Price (cents/oz)	34 (4.5)	38 (6.7) *	37.3 (9.6)	35.7 (4.4)
	Organic (2)	0	4 (100%) **	4 (40%)	4 (15%)

	Hydrog Oils (2)	1 (17%)	0	1 (10%)	5 (19%)
Low Fat Snack (1) (56)	Number of items	17	13	30	26
	Sugar (g)	1.8 (1.9)	1 (1.6)	1.4 (1.8)	1.5 (3.3)
	Total fat (g)	0.4 (0.5)	2.1 (3.4)	1.2 (2.5)	1 (1)
	Fat calories	4.1 (5.1)	23.2 (36.6) *	13 (26.6)	9.8 (10.3)
	Fiber (g)	0.5 (0.8)	1.1 (1.7)	0.8 (1.3)	0.5 (0.9)
	Price (\$/lb)	7.1 (2.0)	5.5 (2.4)	6.5 (2.3)	4.4 (1.7)
	Organic2	5 (29%)	10 (77%) **	14 (47%)	6 (23%)
	Hydrog Oils (2)	0 (0%)	0 (0%)	0	4 (15%) *
Ethnic Bread (1) (41)	Number of items	2	10	12	29
	Sugar (g)	0 (0)	0.7 (1)	0.6 (1)	0.5 (.8)
	Total fat (g)	1.8 (.35)	1.9 (1.5)	2 (1.7)	3.7 (2.5) *
	Fat calories	25 (35)	19 (13.3)	19.8 (16.2)	33.9 (21.4) *
	Fiber (g)	2 (2.8)	3.4 (2.6)	3.2 (2.6)	1.4 (1) **
	Price (\$/lb)	1.37 (0.3)	3.9 (4.4)	2.4 (0.8)	3.2 (2.1)
	Organic2	0	7 (70%) **	7 (58%)	7 (17%) *
	Hydrog Oils (2)	1 (50%)	0* (<0.025)	1 (8%)	12 (41%) *
Crackers (65)	Number of items	5	3	8	57
	Sugar (g)	0.2 (0.4)	0.7 (1.2)	0.4 (0.7)	1.4 (2.7)
	Total fat (g)	3.2 (2.3)	1.5 (1.5)	2.6 (2.1)	3.8 (2.5)
	Fat calories	28 (21)	15 (15)	23.1 (19.3)	34 (22)
	Fiber (g)	3 (1.2)	2.7 (0.6)	2.9 (1)	0.5 (0.7) ***
	Price (\$/lb)	4.7 (0.2)	9.4 (6)	6.5 (4)	6.3 (11.4)
	Organic (2)	0	0	0	5 (9%)
	Hydrog Oils (2)	4 (80%)	0 *	4 (50%)	35 (61%)

1 Low fat snacks = pretzels, rice and corn cakes; ethnic bread = pita bread, tortillas, taco shells, breadsticks

2 Organic and hydrogenated oils were evaluated using Chi Square comparisons.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$ according to unpaired t test comparisons across paired columns (whole grain vs. whole grain and whole grain vs. non-whole grain) or, for organic and hydrogenated oils, Chi square comparisons.

Table 3. Nutrient profiles of traditional and alternative dairy products

Nutrient Component	Mean (SD)					
	Dairy Milk (1) (38)	Non-Dairy Milk (2) (53)	Dairy Yogurt (1) (66)	Non-Dairy Yogurt (2) (20)	Dairy Cheese (1) (114)	Non-Dairy Cheese (2) (28)
Calories	122.9 (32.0)	132.4 (39.6)	157.7 (39.7)	166.8 (25.3)	79.9 (35.9)	50.3 (16.1)***
Fat (g)	4.3 (3.1)	3.0 (1.3)**	1.7 (2.3)	3.1 (1.0)**	6.0 (3.2)	2.3 (1.4)***
Saturated Fat (g)	2.6 (2.0)	0.4 (0.6)***	1.1 (1.5)	0.1 (0.2)**	3.7 (2.0)	0.1 (0.3)***
Protein (g)	8.0 (0.6)	5.2 (2.4)***	7.7 (2.1)	5.3 (1.2)***	5.6 (2.5)	4.7 (2.0)
Vitamin A (% DV)	7.9 (3.2)	7.1 (7.3)	1.2 (2.5)	1.1 (4.5)	4.4 (2.7)	5.3 (4.8)
Calcium (% DV)	29.3 (2.3)	17.7 (11.8)***	28.1 (7.2)	21.6 (24.1)	15.0 (8.8)	15.0 (10.0)

1 Includes goat and buttermilk products

2 Includes soy and rice products

3 SD = standard deviation

**The difference is significant at $p < .01$ in paired columns (e.g., dairy vs. non-dairy milk)

***The difference is significant at $p < .001$ in paired columns (e.g., dairy vs. non-dairy milk)

Table 4. Amount of calcium (according to %DV) in various food categories

Food Category (1) (serving size)	Traditional Supermarket				Natural Foods Supermarket				P value (4)
	N (3)	Classification (2) (% DV)			N (3)	Classification (2) (% DV)			
		Poor	Good	Excellent		Poor	Good	Excellent	
Dairy Milk (240 ml)	22	0	0	100	15	0	0	100	
Non-Dairy Milk (237-250 ml)	21	28	0	62	32	41	6	53	
Dairy Yogurt (6-8 oz)	36	0	0	100	30	0	0	100	
Non-Dairy Yogurt (6-8 oz)	0	0	0	0	20	65	0	35	ID5
Dairy Cheese (1 oz)	91	26	22	52	39	49	10	41	< 0.05
Non-Dairy Cheese (1oz)	1	0	0	100	27	26	19	56	< 0.05
Ice Cream (6) (.5 cup)	47	53	40	6	23	13	83	4	< 0.01
Pudding	23	87	9	4	16	44	56	0	< 0.01
Frozen Entrees	102	61	24	16	33	33	33	33	< 0.05
Alternative Protein (7)	29	86	14	0	23	83	17	0	
Pizza	28	18	29	54	20	15	25	60	
Energy/Sports Bars (1-3.75 oz)	40	18	28	55	48	17	17	67	
Breakfast Cereal (1-2 oz cold; 1-5 oz hot)	74	66	30	4	42	100	0	0	< 0.001

> 90% Juice Beverages (~ 8 oz; 2 oz. frozen conc.)	66	88	6	6	80	96	1	3	
< 90% Juice Beverages (~ 8 oz; 2 oz. frozen conc.)	65	91	8	1	19	100	0	0	

1 Serving sizes provided when range was narrow. If blank, category was too varied to specify typical serving size.

2 Poor = < 10% DV for calcium; Good = 10-19% DV for calcium; Excellent = > 20% DV for calcium

3 N = number of random selections that was equal to or > 20% of items in the category

4 Chi square comparison of proportion of items in different classifications according to store

5 ID = Insufficient data to conduct comparison

6 Ice cream category did not include bars, cones, or sandwiches

7 Alternative protein = tofu, hummus, dried legumes, canned beans, eggs, peanut butter, and meatless hamburgers/hotdogs

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Authors

Heidi Montgomery, M.S.
Former Graduate Student
95 Fifteenth Street
Apalachicola, FL 32320
850-653-3614
970-491-7252(fax)
hkmontgomery@planet-save.com

Mary Schroeder, M.S., R.D.
Research Associate
Department of Food Science and Human Nutrition
Colorado State University
Fort Collins, CO 80523
970-491-3060
970-491-7252 (fax)
schroeder@cahs.colostate.edu

Ruth Inglis-Widrick
Master's Candidate
Department of Food Science and Human Nutrition
Colorado State University
Fort Collins, CO 80523
970-224-9896
970-491-7252 (fax)
inglis@holly.colostate.edu

Laura Young, M.S.
Consultant
Department of Food Science and Human Nutrition
Colorado State University
Fort Collins, CO 80523
970- 454-2934
970-491-7252(fax)
dlyoung1105@yahoo.com

Garry W Auld, Ph.D., R.D. (corresponding author)
Associate Professor
Department of Food Science and Human Nutrition
Colorado State University
Fort Collins, CO 80523
970-491-7429
970-491-7252 (fax)
auld@cahs.colostate.edu