

## 2004 Dairy Foods CDE Written Exam

- Component pricing was introduced in \_\_\_\_\_
  - 1611
  - 1890
  - 1988
  - 2000
- Designed to increase milk production in dairy cows, recombinant bovine somatotropin (rBST) was approved for commercial use, in the United States, in \_\_\_\_\_
  - 1980
  - 1987
  - 1994
  - 2000
- Milk products contain high quality proteins. The whey proteins constitute about 18% of the protein content in milk. Casein, a protein found only in milk, contains \_\_\_\_\_
  - significant levels of carcinogens.
  - 20% lipids.
  - all of the essential amino acids.
  - measurable quantities of rBST.
- The \_\_\_\_\_ in milk plays a role in calcium absorption and utilization. \_\_\_\_\_ is needed in the proper ratio to \_\_\_\_\_ to form bone.
  - vitamin B12, Vitamin B 12, phosphorus
  - phosphorus, Phosphorus, calcium
  - vitamin A, Vitamin D, calcium
  - casein, Casein, calcium
- One cup of \_\_\_\_\_ has more mg of calcium than \_\_\_\_\_
  - low fat (1%) milk, whole
  - whole, low fat (1%) milk
  - vanilla ice cream, evaporated milk
  - vanilla ice cream, buttermilk
- \_\_\_\_\_ is the product resulting from the addition of \_\_\_\_\_ acid-producing bacteria to pasteurized cream containing not less than \_\_\_\_\_ milkfat.
  - Heavy cream, pathogenic, 36 %
  - Cultured milk, low, 3.25 %
  - Yogurt, 10 %, 18 %
  - Sour cream, lactic, 18 %
- \_\_\_\_\_ comes from cows fed and raised without the use of pesticides, synthetic fertilizers, or hormones.
  - Certified milk
  - Substitute milks
  - Wholesome milk
  - Organic milk
- Milkfat carries the following fat soluble vitamins:
  - A, D, E, and K
  - B, B12, D and K
  - C, A, E and K
  - D, riboflavin, niacin and C

- 9 Homogenization is the disintegration of \_\_\_\_\_ in milk to reduce the separation of cream.
- fat globules
  - casein
  - lactic acid
  - calcium
10. Natural (not fortified) milk has an excellent nutrient profile, providing significant amounts of high quality
- protein, calcium, riboflavin, magnesium, phosphorus, vitamin B12, vitamin B6, and vitamin D.
  - protein, calcium, riboflavin, magnesium, phosphorus, vitamin B12, vitamin C and vitamin A.
  - protein, calcium, riboflavin, magnesium, phosphorus, vitamin B12, vitamin C and vitamin D.
  - protein, calcium, riboflavin, magnesium, phosphorus, vitamin B12, vitamin B6 and vitamin A
- 11 Milk's energy (calorie) content varies widely and depends mostly on its \_\_\_\_\_ content.
- casein
  - calcium
  - fat
  - vitamin D
- 12 The current food pyramid recommends that children ages 9 to 18 should consume \_\_\_\_\_
- at least 4 servings of dairy each day.
  - no more than 2 servings of dairy each day.
  - 2 servings of dairy every other day
  - 1 serving of dairy each day.
13. Bovine spongiform encephalopathy has resulted in
- a prohibition against using most mammalian protein sources to manufacture animal feeds given to ruminant animals.
  - an increased number of cases of Mad-cow disease in the United States
  - decreased regulation of animal and animal product imports into the United States
  - a ban on all animal product exports from the United States to the European Union.
14. \_\_\_\_\_ is the process of adding nutrients to milk. Because \_\_\_\_\_ exists in the fat portion, it is often added to low fat milks.
- Homogenization, milk fat
  - Pasteurization, protein
  - Fortification, vitamin A
  - Certification, calcium
15. Cooking cheese at a relatively high temperature causes fat separation and protein \_\_\_\_\_ resulting in a stringy, rubbery product
- denaturation
  - pasteurization
  - homogenization
  - removal
16. Some nutritionists have debated potential changes to the food pyramid, and the IFDA believes that milk, cheese and yogurt should \_\_\_\_\_
- be moved to the top of the pyramid.
  - be maintained as a separate group within the pyramid.
  - be merged with the meats group because of the high protein content.
  - separated into two groups: milk, and cheese/yogurt.
- 17 According to research conducted by MilkPEP, \_\_\_\_\_% of all a carte beverages consumed at schools are beverages other than milk.
- 35
  - 41
  - 65
  - 98

18. MilkPEP plans to conduct three major promotions in 2005, and two of the three promotions include \_\_\_\_\_
- the revised food pyramid.
  - protein content percentages of major milk products.
  - weight loss themes.
  - NBA superstars
19. BSE (bovine spongiform encephalopathy) is a chronic degenerative disease affecting the \_\_\_\_\_ of cattle.
- heart and lungs
  - mammary glands
  - central nervous system
  - endocrine system
20. The HACCP Certification Program is designed to \_\_\_\_\_
- provide consumers with safe, high quality food products.
  - increase prices paid to milk producers
  - decrease the legal requirements for food processors.
  - Provide consumers with lower cost dairy products.
21. A new study released by the Journal of Nutrition studied the correlation between dairy consumption and obesity in adolescent girls. In the study, the girls who consumed more dairy, weighed \_\_\_\_\_ and had \_\_\_\_\_ abdominal fat.
- more, more
  - more, less
  - less, more
  - less, less
22. This summer, \_\_\_\_\_ began offering 2% white milk or 1% chocolate milk as an alternative kids' meal beverage.
- Pizza Hut
  - Hardees
  - Culvers
  - Wendy's
23. A study in the *Journal of the National Cancer Institute* found that \_\_\_\_\_ consumption of milk and calcium were related to \_\_\_\_\_ risk of colon cancer.
- lower, lower
  - lower, increased
  - increased, lower
  - increased, increased
24. \_\_\_\_\_ is the first, nation-wide fast food chain to offer new kid's meals choices including single serving, resealable plastic milk bottles that are easy for small hands to hold and convenient for families on the go.
- Wendy's
  - McDonald's
  - Pizza Hut
  - Burger King
25. A new study in the *Journal of the American Dietetic Association* found that children who avoided milk were more likely to \_\_\_\_\_ and be overweight.
- experience bone fractures
  - suffer from heart disease
  - consume high calorie diets
  - lactose intolerant
26. A 2002 School Milk Pilot Test showed that kids were more likely to choose regular and flavored milks if the milks were served \_\_\_\_\_
- at colder temperatures and in plastic packaging.
  - prior to the noon lunch.
  - with salty snacks
  - with chocolate chip cookies.

27. A new study shows that lactose maldigestion can actually be improved by:
- starting with small portions of dairy and gradually increasing serving size.
  - avoiding cheese consumption.
  - avoiding yogurts.
  - mixing small quantities of bacteria into milk.
28. Because milk flavor will influence the flavor of all products in which it is an ingredient, milk must have good flavor when it comes from the cow. Which of the following milk defects is not one that is attributed to the cow?
- feed
  - foreign
  - salty
  - flat
29. Which of the following statements is not true about the pasteurization of milk:
- Pasteurization kills bacteria that may be present in milk.
  - The process improves the flavor of milk, but reduces the food value, particularly the vitamin content.
  - A process named after Louis Pasteur
  - The process involves heating milk to not lower than 161 degrees F for 15 seconds and promptly cooling, or the process can be accomplished by raising temperature following by rapid cooling
30. Approximately how many pounds of whole milk does it take to make a pound of butter?
- 21.2 pounds
  - 12.2 pounds
  - 6.4 pounds
  - 2.12 pounds

## Analyze & Interpret Information

Utilize the attached references to answer these questions. (Source: Newer Knowledge of Dairy Foods)

31. CFUs are
- beneficial and increase the component value of milk.
  - not relevant to milk pricing
  - undesirable in milk.
  - desirable in limited quantities.
32. Assume a sample of milk has a boiling point of 100.09 degrees Celsius. This could indicate \_\_\_\_\_.
- the milk that has been adulterated with water
  - milk with a higher than average butterfat content.
  - a normal sample of milk.
  - an increase in osmolality.
33. A milk sample pH of 7.2 at 25 degrees Celsius may indicate ....
- an outbreak of mastitis.
  - a high quality milk sample which is almost neutral pH (7.0).
  - production of lactic acid by *Lactobacillus* bacteria.
  - an abnormally low pH.
34. In a hospital setting, patients with sensitive gastrointestinal tracts would likely be given foods with
- high osmolality.
  - low osmolality.
  - low electrical conductivity.
  - high surface tension.

35. Dietary intake of \_\_\_\_\_ is especially important for individuals that do not receive adequate exposure to sunlight
- calcium
  - vitamin B6
  - vitamin D
  - biotin
36. For people who are sensitive to lactose, the following product may be their best choice:
- whole milk
  - 1% milk
  - lactaid (lactose-reduced lowfat milk)
  - cheddar cheese
37. Which of the following products has more calcium and less fat than whole milk:
- 1 cup of cottage cheese
  - 1 cup of chocolate whole milk
  - 1 cup of nonfat milk
  - 1 cup of chocolate low fat milk
38. How many cups of reduced fat 2% milk would a 14-year-old female need to consume to meet her daily requirement of magnesium.
- 1 cup
  - 2 cups
  - 6 cups
  - 11 cups
39. Assume a sample of milk, when cooled to 15 degrees Celsius, has a specific gravity of 1.010. The sample \_\_\_\_\_.
- may have been adulterated with water
  - may have a lower than normal fat content.
  - may have a lower than normal viscosity
  - may have a higher overall solids content (other than fat).
40. Which of the following products is the best overall source of amino acids?
- American cheese
  - Cheddar cheese
  - Cream cheese
  - Mozzarella cheese

TABLE 3

**Food and Nutrition Board, Institute of Medicine-National Academy of Sciences  
Dietary Reference Intakes: Recommended Intakes For Individuals**

Life-Stage Group	Calcium (mg/d)	Phosphorus (mg/d)	Magnesium (mg/d)	Vitamin D (µg/d) <sup>a,b</sup>	Fluoride (mg/d)	Thiamin (mg/d)	Riboflavin (mg/d)	Niacin (mg/d) <sup>c</sup>	Vitamin B <sub>6</sub> (mg/d)	Folate (µg/d) <sup>d</sup>	Vitamin B <sub>12</sub> (µg/d)	Pantothenic Acid (mg/d)	Biotin (µg/d)	Choline <sup>e</sup> (mg/d)
<b>Infants</b>														
0-6 months	210*	100*	30*	5*	0.01*	0.2*	0.3*	2*	0.1*	65*	0.4*	1.7*	5*	125*
7-12 months	270*	275*	75*	5*	0.5*	0.3*	0.4*	4*	0.3*	80*	0.5*	1.8*	6*	150*
<b>Children</b>														
1-3 years	500*	460	80	5*	0.7*	0.5	0.5	6	0.5	150	0.9	2*	8*	200*
4-8 years	800*	500	130	5*	1*	0.6	0.6	8	0.6	200	1.2	3*	12*	250*
<b>Males</b>														
9-13 years	1,300*	1,250	240	5*	2*	0.9	0.9	12	1.0	300	1.8	4*	20*	375*
14-18 years	1,300*	1,250	410	5*	3*	1.2	1.3	16	1.3	400	2.4	5*	25*	550*
19-30 years	1,000*	700	400	5*	4*	1.2	1.3	16	1.3	400	2.4	5*	30*	550*
31-50 years	1,000*	700	420	5*	4*	1.2	1.3	16	1.3	400	2.4	5*	30*	550*
51-70 years	1,200*	700	420	10*	4*	1.2	1.3	16	1.7	400	2.4 <sup>f</sup>	5*	30*	550*
> 70 years	1,200*	700	420	15*	4*	1.2	1.3	16	1.7	400	2.4 <sup>f</sup>	5*	30*	550*
<b>Females</b>														
9-13 years	1,300*	1,250	240	5*	2*	0.9	0.9	12	1.0	300	1.8	4*	20*	375*
14-18 years	1,300*	1,250	360	5*	3*	1.0	1.0	14	1.2	400 <sup>g</sup>	2.4	5*	25*	400*
19-30 years	1,000*	700	310	5*	3*	1.1	1.1	14	1.3	400 <sup>g</sup>	2.4	5*	30*	425*
31-50 years	1,000*	700	320	5*	3*	1.1	1.1	14	1.3	400 <sup>g</sup>	2.4	5*	30*	425*
51-70 years	1,200*	700	320	10*	3*	1.1	1.1	14	1.5	400	2.4 <sup>f</sup>	5*	30*	425*
> 70 years	1,200*	700	320	15*	3*	1.1	1.1	14	1.5	400	2.4 <sup>f</sup>	5*	30*	425*
<b>Pregnancy</b>														
≤ 18 years	1,300*	1,250	400	5*	3*	1.4	1.4	18	1.9	600 <sup>h</sup>	2.6	6*	30*	450*
19-30 years	1,000*	700	350	5*	3*	1.4	1.4	18	1.9	600 <sup>h</sup>	2.6	6*	30*	450*
31-50 years	1,000*	700	360	5*	3*	1.4	1.4	18	1.9	600 <sup>h</sup>	2.6	6*	30*	450*
<b>Lactation</b>														
≤ 18 years	1,300*	1,250	360	5*	3*	1.5	1.6	17	2.0	500	2.8	7*	35*	550*
19-30 years	1,000*	700	310	5*	3*	1.5	1.6	17	2.0	500	2.8	7*	35*	550*
31-50 years	1,000*	700	320	5*	3*	1.5	1.6	17	2.0	500	2.8	7*	35*	550*

NOTE: This table presents Recommended Dietary Allowances (RDAs) in bold type and Adequate Intakes (AIs) in ordinary type followed by an asterisk (\*). RDAs and AIs may both be used as goals for individual intake. RDAs are set to meet the needs of a data

prevent being able to specify with confidence the percentage of individuals covered by this intake.

<sup>a</sup> As cholecalciferol. 1 µg cholecalciferol = 40 IU vitamin D.

<sup>b</sup> In the absence of adequate exposure to sunlight.

<sup>c</sup> As niacin equivalents (NE). 1 mg of niacin = 60 mg of tryptophan; 0-6 months = pre-formed niacin (not NE).

<sup>d</sup> As dietary folate equivalents (DFE). 1 DFE = 1 µg food folate = 0.6 µg of folic acid (from fortified food or supplement) consumed with food = 0.5 µg of synthetic (supplemental) folic acid taken on an empty stomach.

<sup>e</sup> Although AIs have been set for choline, there are few data to assess whether a dietary supply of choline is needed at all stages of the life cycle, and it may be that the choline requirement can be met by endogenous synthesis at some of these stages.

<sup>f</sup> Because 10 to 30 percent of older people may have malabsorption of food-bound B<sub>12</sub>, it is advisable for those older than 50 years to meet their RDA mainly by consuming foods fortified with B<sub>12</sub> or a supplement containing B<sub>12</sub>.

<sup>g</sup> In view of evidence linking folate intake with neural tube defects in the fetus, it is recommended that all women capable of becoming pregnant consume 400 µg of synthetic folic acid from fortified foods and/or supplements in addition to intake of food folate from a varied diet.

<sup>h</sup> a b c.

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Newer Knowledge of Dairy Foods / Appendix

TABLE 4

Recommended Dietary Allowances<sup>a</sup>, Revised 1989  
 Food and Nutrition Board, National Academy of Sciences-National Research Council  
 Designed for the Maintenance of Good Nutrition of Practically All Healthy People in the U.S.A.

Age or condition (Years)	Protein (g)	Fat-Soluble Vitamins			Water-Soluble Vitamins (mg)	Minerals														
		Vitamin A (µg RE) <sup>b</sup>	Vitamin E (µg α-IE) <sup>c</sup>	Vitamin K (µg)		Iron (mg)	Zinc (mg)	Iodine (µg)	Selenium (µg)											
Infants																				
0.0-0.5	13	375	3	5	30	6	5	40	10											
0.5-1.0	14	375	4	10	35	10	5	50	15											
Children																				
1-3	16	400	6	15	40	10	10	70	20											
4-6	24	500	7	20	45	10	10	90	20											
7-10	28	700	7	30	45	10	10	120	30											
Males																				
11-14	45	1,000	10	45	50	12	15	150	40											
15-18	59	1,000	10	65	60	12	15	150	50											
19-24	58	1,000	10	70	60	10	15	150	70											
25-50	63	1,000	10	80	60	10	15	150	70											
51+	63	1,000	10	80	60	10	15	150	70											
Females																				
11-14	46	800	8	45	50	15	12	150	45											
15-18	44	800	8	55	60	15	12	150	50											
19-24	46	800	8	60	60	15	12	150	55											
25-50	50	800	8	65	60	15	12	150	55											
51+	50	800	8	65	60	10	12	150	55											
Pregnant	60	800	10	65	70	30	15	175	65											
Lactating	65	1,300	12	65	95	15	19	200	75											
1 <sup>st</sup> 6 mos.	62	1,200	11	65	90	15	16	200	75											
2 <sup>nd</sup> 6 mos.																				

<sup>a</sup> The allowances, expressed as average daily intakes over time, are intended to provide for individual variations among most normal persons as they live in the United States under usual environmental stresses. Diets should be based on a variety of common foods in order to provide other nutrients for which human requirements have been less well defined.  
<sup>b</sup> Retinol equivalents. 1 retinol equivalent = 1 µg retinol or 6 µg β-carotene.  
<sup>c</sup> α-Tocopherol equivalents. 1 mg d-α-tocopherol = 1 α-TE.

**TABLE 10**  
**Lactose Content of Milk and Other Dairy Products**

<u>Product</u>	<u>Lactose (g)</u>
Milk (1 cup)	
Whole	9-12
2%	9-13
1%	12-13
Skim	11-14
Chocolate	10-12
Buttermilk	9-12
Evaporated	24-28
Sweetened condensed	31-50
Lactaid (lactose-reduced lowfat milk) <sup>a</sup>	3
Goat's milk	11-12
Acidophilus, skim	11
Yogurt, lowfat (1 cup) <sup>b</sup>	4-17
Cheese (1 oz.)	
Cottage (1/2 cup)	0 7-4
Cheddar, sharp	0 4-0 6
Swiss	0 5-1
Mozzarella, part skim, low moisture	0 08-0 9
American, pasteurized, processed	0 05-4
Ricotta (1/2 cup)	0 3-6
Cream	0 1-0 8
Butter (1 pat)	0 04-0 5
Cream (1 tbsp)	
Light	0 6
Whipping	0 4-0 5
Sour	0 4-0 5
Ice Cream (1/2 cup)	2-6
Ice Milk (1/2 cup)	5
Sherbet (1/2 cup)	0 6-2

Source: Scrimshaw, N S., and Murray, E.B., Am J. Clin Nutr., 48(suppl 4), 1988

<sup>a</sup> From *Bowes & Church's Food Values of Portions Commonly Used*. Jean A. Pennington, 1989

<sup>b</sup> Studies have shown that yogurt with live active cultures is significantly better tolerated than milk because of its high lactase activity

**TABLE 13**  
**Nutrient Content of Select Dairy Foods**

Nutrients	Units	Milk'						
		Whole 3.25% fat 1 cup	Reduced Fat 2% fat 1 cup	Lowfat 1% fat 1 cup	Nonfat 1 cup	Chocolate Whole 1 cup	Chocolate Reduced Fat 1 cup	Chocolate Lowfat 1 cup
<b>Proximates</b>								
Water	g	214.70	217.67	220.04	221.43	205.75	208.95	211.25
Energy	kcal	149.92	121.20	104.42	90.33	208.38	178.84	157.57
Energy	kJ	627.08	507.52	436.10	377.30	872.50	747.50	660.00
Protein	g	8.03	8.13	8.53	8.75	7.93	8.03	8.10
Total lipid (fat)	g	8.15	4.69	2.38	0.61	8.48	5.00	2.50
Carbohydrate by difference	g	11.37	11.71	12.18	12.30	25.85	26.00	26.10
Fiber, total dietary	g	0.00	0.00	0.00	0.00	2.00	1.25	1.25
Ash	g	1.76	1.81	1.89	1.91	2.00	2.03	2.05
<b>Minerals</b>								
Calcium	mg	291.34	296.70	312.87	316.30	280.25	284.00	286.75
Iron	mg	0.12	0.12	0.12	0.12	0.60	0.60	0.60
Magnesium	mg	32.79	33.36	35.16	35.55	32.58	33.00	33.33
Phosphorus	mg	227.90	232.04	244.76	254.80	251.25	254.25	256.50
Potassium	mg	369.66	376.74	397.15	418.22	417.25	422.00	425.50
Sodium	mg	119.56	121.76	128.38	129.85	149.00	150.50	151.75
Zinc	mg	0.93	0.95	0.98	1.00	1.03	1.03	1.03
Copper	mg	0.02	0.02	0.03	0.03	0.16	0.16	0.16
Manganese	mg	0.10	0.01	0.01	0.01	0.19	0.19	0.19
Selenium	mcg	4.88	5.37	5.64	5.39	4.75	4.75	4.75
<b>Vitamins</b>								
Vitamin C ascorbic acid	mg	2.29	2.32	2.45	2.47	2.28	2.30	2.33
Thiamin	mg	0.09	0.10	0.10	0.10	0.09	0.09	0.10
Riboflavin	mg	0.40	0.40	0.42	0.43	0.41	0.41	0.42
Niacin	mg	0.21	0.21	0.22	0.22	0.31	0.32	0.32
Pantothenic acid	mg	0.77	0.78	0.82	0.83	0.74	0.75	0.76
Vitamin B <sub>6</sub>	mg	0.10	0.11	0.11	0.11	0.10	0.10	0.10
Folate	mcg	12.20	12.44	12.99	13.23	11.75	12.00	12.00
Vitamin B <sub>12</sub>	mcg	0.87	0.89	0.94	0.95	0.84	0.85	0.86
Vitamin A, IU	IU	307.44	500.20	499.80	499.80	302.50	500.00	500.00
Vitamin A, RE	mcg, RE	75.64	139.08	144.55	149.45	72.50	142.50	147.50

Newer Knowledge of Dairy Foods / Appendix

Nutrients	Units	Cheese					Cultured Dairy Foods					
		Cheddar 1 oz.	Cream 1 oz.	Cottage 1 cup	Mozzarella Part Skim, Low Moisture 1 oz.	American Pasteurized Process 1 oz.	Yogurt Plain, Whole Milk 1 cup	Yogurt Plain, Nonfat Milk 1 cup	Buttermilk Lowfat 1 cup			
<b>Proximates</b>												
Water	g	10.42	15.24	93.20	13.77	11.10	215.36	208.81	220.82			
Energy	kcal	114.13	98.95	81.81	79.36	106.44	150.48	136.64	99.00			
Energy	kJ	477.41	413.91	342.39	331.98	445.38	629.65	570.85	414.05			
Protein	g	7.06	2.14	14.00	7.79	6.28	8.50	14.04	8.11			
Total lipid (fat)	g	9.40	9.89	1.15	4.85	8.86	7.96	0.44	2.16			
Carbohydrate by difference	g	0.36	0.75	3.07	0.89	0.45	11.42	18.82	11.74			
Fiber, total dietary	g	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
Ash	g	1.11	0.33	1.57	1.05	1.66	1.76	2.89	2.18			
<b>Minerals</b>												
Calcium	mg	204.49	22.65	68.82	207.32	174.49	295.72	487.80	285.18			
Iron	mg	0.19	0.34	0.16	0.07	0.11	0.12	0.22	0.12			
Magnesium	mg	7.88	1.83	6.03	7.45	6.31	28.37	46.80	26.83			
Phosphorus	mg	145.18	29.60	151.19	148.58	211.18	232.51	383.43	218.54			
Potassium	mg	27.90	33.85	96.62	26.89	45.93	378.77	624.51	370.69			
Sodium	mg	175.91	83.77	458.78	149.60	405.52	113.68	187.43	257.01			
Zinc	mg	0.88	0.15	0.43	0.89	0.85	1.45	2.38	1.03			
Copper	mg	0.01	0.01	0.03	0.01	0.01	0.02	0.04	0.03			
Manganese	mg	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01			
Selenium	mcg	3.94	0.68	10.17	4.62	4.08	5.39	8.82	4.90			
<b>Vitamins</b>												
Vitamin C ascorbic acid	mg	0.00	0.00	0.00	0.00	0.00	1.30	2.13	2.40			
Thiamin	mg	0.01	0.01	0.02	0.01	0.01	0.07	0.12	0.08			
Riboflavin	mg	0.11	0.06	0.19	0.10	0.10	0.35	0.57	0.38			
Niacin	mg	0.02	0.03	0.15	0.03	0.02	0.18	0.30	0.14			
Pantothenic acid	mg	0.12	0.08	0.24	0.03	0.14	0.95	1.57	0.67			
Vitamin B <sub>6</sub>	mg	0.02	0.01	0.08	0.02	0.02	0.08	0.13	0.08			
Folate	mcg	5.16	3.74	14.01	2.81	2.21	18.13	29.89	12.25			
Vitamin B <sub>12</sub>	mcg	0.23	0.12	0.72	0.26	0.20	0.91	1.50	0.54			
Vitamin A, IU	IU	300.23	404.56	41.81	199.30	342.92	301.35	17.15	80.85			
Vitamin A, RE	mcg, RE	78.81	108.30	12.43	54.15	82.22	73.50	4.90	19.60			
Vitamin E,	mg, ATE	0.10	0.27	0.12	0.13	0.13	0.22	0.01	0.15			

Newer Knowledge of Dairy Foods / Appendix

Nutrients	Units	Cheese					Cultured Dairy Foods					
		Cheddar 1 oz.	Cream 1 oz.	Cottage 1 cup	Mozzarella Part Skim, Low Moisture 1 oz.	American Pasteurized Process 1 oz.	Yogurt Plain, Whole Milk 1 cup	Yogurt Plain, Nonfat Milk 1 cup	Buttermilk Lowfat 1 cup			
<b>Lipids</b>												
Fatty acids, saturated	g	5.98	6.23	0.73	3.08	5.58	5.14	0.28	1.34			
4:0	g	0.30	0.28	0.04	0.16	0.30	0.24	0.01	0.07			
6:0	g	0.15	0.08	0.01	0.03	0.10	0.16	0.01	0.04			
8:0	g	0.08	0.10	0.01	0.04	0.11	0.10	0.01	0.03			
10:0	g	0.17	0.19	0.02	0.08	0.18	0.23	0.01	0.05			
12:0	g	0.15	0.13	0.02	0.05	0.14	0.27	0.02	0.06			
14:0	g	0.94	1.02	0.12	0.49	0.91	0.84	0.05	0.22			
16:0	g	2.78	2.99	0.35	1.48	2.58	2.17	0.12	0.57			
18:0	g	1.14	1.15	0.13	0.59	1.08	0.78	0.04	0.26			
Fatty acids, Monounsaturated	g	2.66	2.79	0.33	1.38	2.54	2.19	0.12	0.62			
16:1	g	0.29	0.28	0.04	0.13	0.29	0.17	0.01	0.05			
18:1	g	2.24	2.38	0.30	1.18	2.13	1.82	0.10	0.54			
20:1	g	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
22:1	g	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
Fatty acids, polyunsaturated	g	0.27	0.36	0.04	0.14	0.28	0.23	0.01	0.08			
18:2	g	0.16	0.22	0.03	0.10	0.17	0.16	0.01	0.05			
18:3	g	0.10	0.14	0.01	0.04	0.11	0.07	0.000	0.03			
18:4	g	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
20:4	g	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
20:5	g	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
22:5	g	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
22:6	g	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
Cholesterol	mg	29.74	31.10	4.97	15.31	26.76	31.12	4.41	8.58			
Phytosterols	mg											
<b>Amino Acids</b>												
Tryptophan	g	0.09	0.02	0.16	0.11	0.09	0.05	0.08	0.09			
Threonine	g	0.25	0.09	0.62	0.30	0.20	0.35	0.58	0.39			
Isoleucine	g	0.44	0.11	0.82	0.37	0.29	0.46	0.77	0.50			
Leucine	g	0.68	0.21	1.44	0.76	0.56	0.86	1.41	0.81			
Lysine	g	0.59	0.19	1.13	0.79	0.62	0.76	1.26	0.68			

TABLE 14

General Physical Properties of Milk

Property	Value	Definition and Significance	Property	Value	Definition and Significance
Titratable acidity, % max	0.16	The total acidity or the amount of alkali required to neutralize the acidic constituents. Generally expressed as lactic acid. Used to determine bacterial growth in fermentations and compliance standards	Specific heat at		The specific heat of milk products depends on their composition and the temperature. Important in processing as the amount of heat or refrigeration required may be calculated from the weight and specific heat of the different products being pasteurized or cooled
			0° C	0.92	
			15° C	0.94	
pH	6.6 ± 0.2 at 25° C	Fresh milk is slightly acid (pH of drinking water is 7.0-8.5). Generally the pH is lower (pH 6.0) in colostrum and higher (up to 7.5) during mastitis than in normal milk of mid-lactation	Coefficient of expansion at		The ratio of an increase in volume per unit increase in temperature. Milk expands when heated and contracts when cooled. Used for design of dairy equipment
			10° C	0.9975	
			15.6° C	0.9985	
Surface tension	50-52 dynes at 20° C	Normally, cow's milk's surface tension is about 70% of that of water. Involved in adsorption and formation and stability of emulsions. Important to creaming, functions of fat globule membranes, foaming, and emulsifier use	21.1° C	1.0000	Refers to resistance to flow measured in centipoise (cp). Used to assess aggregation of protein micelles or fat globules. Also used for design of dairy equipment
			Viscosity	2.0-2.1 cp at 20° C	
Specific gravity	1.032 at 15° C	Ratio of the density of the product and the density of water at the same temperature. Many milk constituents have a specific gravity (sg) greater than that of water which has a sg of one. The more fat in milk, the lower the sg as fat has an sg less than one. Used to estimate solids not fat	Electrical conductivity	45-55x10 <sup>-4</sup> mho	In milk, fat and colloiddally dispersed substances decrease conductivity. Used to detect added neutralizers, follow fermentation, and monitor demineralization of whey.
			Osmolality*	275 m Osm/kg	
Freezing point	-0.540° C	Lower than that of pure water (0° C) due to dissolved substances in milk. Used to detect adulteration of milk with water			The osmolality of a solution is based on the number of particles in solution - the greater the number of particles, the higher the osmolality. Osmolality of foods is important in planning diets of low osmolality for certain patients. Since a solution of lower osmolality requires transfer of less water to the stomach and gastrointestinal tract to dilute it, it should be better tolerated than one of higher osmolality.
Boiling point	100.17° C	Greater than that of pure water (100° C) due to dissolved substances in milk. Used to detect adulteration of milk with added water			

\* Source: The Doyle Pharmaceutical Company, Minneapolis, Minn

Table 24

## Various Pasteurized Milk Ordinance (PMO) Requirements for Grade A Compliance

Standard	Raw Milk	Pasteurized Milk and Bulk-Shipped Heat-Treated Milk	Aseptically Processed Milk
Temperature	Cooled to 7°C (45°F) or less within 2 hr after milking, provided that the blend temperature after the first and subsequent milkings does not exceed 10°C (50°F)	Cooled to 7°C (45°F) or less and maintained thereat	
Bacterial limits Standard plate count	Individual producer milk not to exceed 100,000 CFU <sup>a</sup> /ml prior to commingling with other producer milk. Not to exceed 300,000 CFU/ml as commingled milk prior to pasteurization	20,000 CFU/ml limit	No growth by tests specified in the PMO
Coliforms		Not to exceed 10 CFU/ml provided that, in case of bulk milk transport, tank shipments shall not exceed 100 CFU/ml	
Somatic cell counts	Individual producer milk not to exceed 750,000 CFU/ml		
Drugs	No positive results on drug residue detection methods prescribed in the PMO	No positive results on drug residue detection methods for pasteurized milk as prescribed. Not applicable to cultured products	No positive results on drug residue detection methods for aseptically processed milk as prescribed. Not applicable to cultured products
Phosphatase		Less than 1 µg/ml by the Scharer Rapid Method. Less than 350 milliunits per liter for fluid products and less than 500 for other milk products by the Fluorometer or Charm ALP or equivalent	

From Chandan, R., 1997. With permission.

<sup>a</sup> Colony-forming units

## 2004 Dairy Foods Key

### Written Exam

1. D
2. C
3. C
4. B
5. A
6. D
7. D
8. A
9. A
10. D
11. C
12. A
13. A
14. C
15. A
16. B
17. D
18. C
19. C
20. A
21. D
22. D
23. C
24. B
25. A
26. A
27. A
28. D
29. B
30. A

### Analyze and Interpret

31. C
32. A
33. A
34. B
35. C
36. D
37. C
38. D
39. A
40. D

# Dairy Products CDE References 2004

The 2004 Dairy Foods CDE exam will be written utilizing the following web-based resources. All of these resources (except old tests) are available via the internet.

## As listed in the CDE Rules, the following resources were referenced in developing the 2004 Dairy Foods Exam.

1. "Milk Flavor Defects," Iowa State University of Science and Technology, FT-1000, Ames, Iowa 50011.
3. "Newer Knowledge of Cheese and Other Cheese Products," National Dairy Council, Rosemont, Illinois 60018, pages 1-23.

## Other Resources Utilized in Developing the 2004 Dairy Foods Exam

Old Dairy Products CDE Exams – Tests from the past five years may be utilized as references. (ie., basic factual information about dairy products such as product descriptions, processing and handling practices) Current events items will NOT be taken from old exams.

## Newer Knowledge of Dairy Foods

More specifically the following pages may be utilized:

Kinds of Milk

<http://www.nationaldairycouncil.org/nutrition/products/milk.asp?page=1>

Nutrient Content of Milk

<http://www.nationaldairycouncil.org/nutrition/products/milk.asp?page=2>

Milks Physical Characteristics and Constituents

<http://www.nationaldairycouncil.org/nutrition/products/milk.asp?page=4>

Protecting the Quality of Milk and Other Dairy Foods

<http://www.nationaldairycouncil.org/nutrition/products/milk.asp?page=5>

## Milk Facts

<http://www.idfa.org/facts/milk.cfm>

Milestones of Milk History in the United States

<http://www.idfa.org/facts/milk/milkfact/milk4.pdf>

Importance of Milk in the Diet

<http://www.idfa.org/facts/milk/milkfact/milk5.pdf>

2001 Fluid Milk Sales and Consumption Review

<http://www.idfa.org/facts/milk/milkfact/milk27.pdf>

2001 Fluid Milk and Dairy Product Production Overview

<http://www.idfa.org/facts/milk/milkfact/milk11.pdf>

Pasteurization: Definitions and Methods  
<http://www.idfa.org/facts/milk/pasteur.cfm>

Calcium Content of Milk, Milk Products, and Milk-Based Foods  
<http://www.idfa.org/facts/milk/milkfact/milk6.pdf>

Definitions: Fluid Milk and Milk Products  
<http://www.idfa.org/facts/milk/milkfact/milk7-8.pdf>

APPENDIX TABLES from “Newer Knowledge of Dairy Foods” will be utilized for this section of the CDE.

<http://www.nationaldairycouncil.org/nutrition/products/knowledge.asp>

More specifically the following pages may be utilized:

Kinds of Milk

<http://www.nationaldairycouncil.org/nutrition/products/milk.asp?page=1>

Nutrient Content of Milk

<http://www.nationaldairycouncil.org/nutrition/products/milk.asp?page=2>

Milks Physical Characteristics and Constituents

<http://www.nationaldairycouncil.org/nutrition/products/milk.asp?page=4>

Protecting the Quality of Milk and Other Dairy Foods

<http://www.nationaldairycouncil.org/nutrition/products/milk.asp?page=5>

## Interpreting & Analyzing Information:

APPENDIX TABLES from “Newer Knowledge of Dairy Foods” will be utilized for this section of the CDE.

<http://www.nationaldairycouncil.org/nutrition/products/knowledge.asp>

More specifically the following pages may be utilized:

Tables (Click on the table number to open the link.)

[Table 1](#): Milk Consumed Through Schools, 1989-1997

[Table 3](#): Food and Nutrition Board, Institute of Medicine-National Academy of Sciences Dietary Reference Intakes: Recommended Intakes for Individuals

[Table 4](#): Recommended Dietary Allowances, Revised 1989

[Table 7](#): Nutrient Composition of Milks from Different Species

[Table 8](#): Serving Guidelines for All Ages

[Table 9](#): Nutrient Content Descriptions for Dairy Products in the United States

[Table 10](#): Lactose Content of Milk and Other Dairy Products

[Table 13](#): Nutrient Content of Select Dairy Foods

[Table 14](#): General Physical Properties of Milk

[Table 17](#): Average Measures of Protein Quality for Milk and Milk Proteins

[Table 24](#): Various Pasteurized Milk Ordinance (PMO) Requirements for Grade A Compliance

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## Current Events References

### **The following articles are from the: International Dairy Foods Association**

#### **Dairy Food Group Should Retain Place in Pyramid, Says IDFA**

Given their proven nutritional benefits, dairy foods should continue to have a separate food group within the federal Food Guide Pyramid, according to IDFA in its August 24 comments to the U.S. Department of Agriculture (USDA). IDFA offered its input in response to USDA's call for comments in the second and final phase of the agency's review of the 12-year-old pyramid. USDA has stated that the review could result in a new shape for its graphic food guide, replacing the pyramid. IDFA believes that science supports the tool, no matter the shape, having a distinct Milk, Cheese and Yogurt Group.

"As depictions of the food guide system are considered, we believe that the nutritional attributes of dairy foods support their continued inclusion as a separate food group," wrote IDFA President and CEO Connie Tipton in the comments. The Milk, Cheese and Yogurt Group in the current pyramid recommends at least two to three servings a day for the majority of Americans.

In this phase of the revision, USDA is specifically looking at the shape of the food guidance tool; last fall, the department reviewed relevant nutrition data and the tool's daily food intake patterns. IDFA supports keeping the pyramid shape, since it is "well-recognized by the public as a guide of recommended eating." IDFA believes that USDA should make alterations to the basic format in order to "build on the recognition and acceptance by the American public."

Regarding consumer education, IDFA advocates the broad use of the final food guidance tool in order to reach as much of the public as possible with strong nutrition messages.

"The more options for accessing the food guidance system, the more likely it will be seen and used," noted Tipton, who stated that its voluntary inclusion on food labels could be one opportunity to distribute the graphic tool.

In addition to the Food Guide Pyramid update, USDA is involved in a parallel review of the U.S. Dietary Guidelines, which provide the nutrition recommendations on which the pyramid tool is based. At recent meetings of the government advisory panel on the Dietary Guidelines, committee members have indicated that their revised guidelines may include a recommendation for three servings of dairy each day. USDA and the U.S. Department of Health and Human Services (HHS) are reviewing the committee's draft report now. The government expects to release the revised Dietary Guidelines and the new Food Guide Pyramid (or other shape) by early 2005.

To read IDFA's full comments, [click here](#). (.pdf) For more information, contact Michelle Albee Matto at [mmatto@idfa.org](mailto:mmatto@idfa.org), 202/220-3523.

# # #

## **New Tools Help Milk Processors and Schools Improve School Milk**

### ***MilkPEP Launches Program to Capture School Milk Opportunity***

**(Washington, D.C. — May 5, 2004)** — The Milk Processor Education Program (MilkPEP) today announced the launch of "Capturing the School Milk Opportunity," a new program to help improve the offering of milk in schools. Many milk processors are already using the program in talking with schools about milk in the coming 2004-05 school year.

The program suggests different options for processors and school foodservice directors to use, such as merchandising changes, adding milk to a la carte and vending programs, offering new flavors of milks, creating different packaging, increasing package size, and many others. The program includes 15 case studies that outline success stories from various processors and schools to give other processors and schools a springboard to formulate their own plans.

"There is 'no one-size fits all approach' to make the school milk experience more positive for students, but we want to be sure processors and schools are aware of the many different options they have to improve this business channel," says International Dairy Foods Association Vice President of Marketing Tom Nagle. "Schools are re-negotiating their milk contracts now, so they and processors need to act quickly to implement some of these changes in time for the next school year."

The program includes customizable spreadsheets so that processors and foodservice directors can evaluate how different improvements will affect school milk sales and to allow for easy cost analysis. Other materials provide ways to track and measure a program's success.

Huge potential increases in milk volume are at stake. The school milk channel represents 6% of all milk sales volume, but comprises the most individual units sold and the most consumer purchase occasions.

Other beverage companies have navigated the school retail market with much success.

Currently, beverages other than milk account for 98% of a la carte beverage sales and 41% of total school beverage consumption. Almost 95% of high schools, three-quarters of middle schools and almost half of elementary schools have vending machines or snack shops where students can buy food and drinks. At 65% of schools students can buy drinks from vending machines during lunch.

Processors interested in obtaining "Capturing the School Milk Opportunity" educational materials can call the milk hotline at 1-800-945-MILK to request a binder. Included in the binder is a CD-ROM with the customizable spreadsheet templates. The seminar presentation and customizable spreadsheet templates are available on [www.milkpep.org](http://www.milkpep.org).

# # #

*The Milk Processor Education Program (MilkPEP), Washington, D.C., is funded by the nation's milk processors, who are committed to increasing fluid milk consumption. The International Dairy Foods Association (IDFA) is contracted by MilkPEP to administer processor-funded programming. For more information on the campaign, go to [www.whymilk.com](http://www.whymilk.com) or [www.idfa.org](http://www.idfa.org).*

## **MilkPEP Looks Ahead to 2005 Promotions**

Milk processors should begin planning now for three major promotions from the Milk Processor Education Program (MilkPEP) that are set for next year. Two of the three programs include weight loss themes in conjunction with MilkPEP's "24/24 Milk Your Diet. Lose Weight!" efforts, while the third continues a successful partnership with the National Basketball Association (NBA) aimed at teens. Processors are encouraged to incorporate these promotions into their corporate 2005 marketing plans.

"Now is the time to get next year's exciting milk promotions on retailers' radar screens," noted Elayna McKenzie, IDFA director of marketing. "Processors should make sure to attend the MilkPEP Sales Meeting on September 28. Not only will the meeting provide a thorough review of these promotions, but it will also cover IDFA's updated weight loss claims that licensed processors can use on labels, and in advertising, public relations and promotional materials."

MilkPEP's three promotions in 2005 are:

- **A New View of You** — In time for New Year's Day resolutions, consumers can receive a free calendar, entitled the "New View of You 2005 Planner," with every milk purchase at participating stores. Also, they'll be able to enter an online contest to win one of 24 trips to New York City that includes a makeover, shopping spree and tickets to see a live show of "The View," a popular daytime program.
- **Fuel Up with Milk. Gear Up with the NBA** — In February, MilkPEP and the NBA are teaming up to celebrate flavored milk as a healthy alternative to soda. Featuring NBA superstar Carmelo Anthony, the program promotes an online auction, where kids can bid for NBA prizes — including wristbands, sports jerseys, and to a trip to the NBA Finals — using milk proofs of purchase. The promotion will be supported at retail with a feature ad incentive program.
- **Get the Curves You Want** — This promotion hits stores in the spring, offering consumers a free two-week membership to Curves® Fitness Centers with two milk caps. The offer is redeemable at Curves®, so there's no extra work for retailers. Additionally, the program will feature an online sweepstakes that will give away 24, 24-month memberships at Curves®, which is the largest fitness franchise in the world designed exclusively for women.

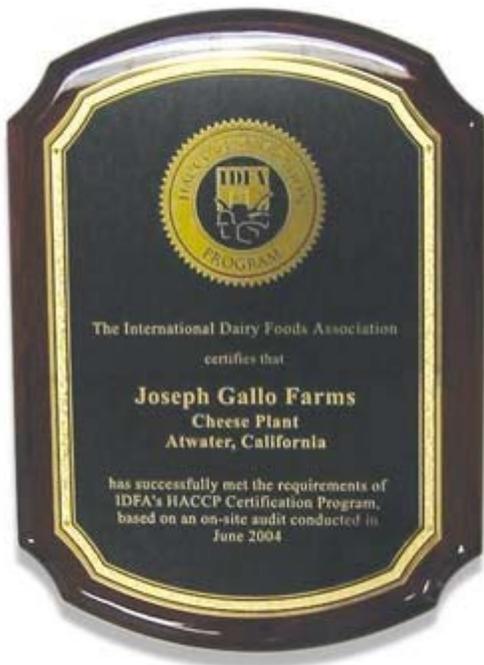
Full details will be provided in the 2005 sales kits, which will be sent to processors in late September, as well as at next month's MilkPEP Sales Meeting, which is being held in conjunction with BevExpo in Tampa. For more information or to register for the Sales Meeting, [click here](#). Questions about MilkPEP promotions can be directed to Elayna McKenzie at [emckenzie@idfa.org](mailto:emckenzie@idfa.org), 202/220-3504.

## What is the IDFA HACCP Certification Program?

The International Dairy Foods Association (IDFA) recently launched a comprehensive Hazard Analysis and Critical Control Point (HACCP) certification and training program that will train your operation to fully meet the requirements for U.S. dairy and juice plants. With the advent of a HACCP pilot program from NCIMS and the Food and Drug Administration's (FDA) mandatory program for juice plants, HACCP is, more than ever, the best food safety choice you can make for your company. Through the IDFA HACCP Certification Program, IDFA will help design HACCP programs for all of your products, fully train your staff and audit your programs.

With the IDFA HACCP Certification Program, you can:

- Increase your marketing advantage and enhance customer confidence in your products and operations
- Implement a single, more-focused method for product safety, efficiency and cost savings
- Improve your relationship with state and federal officials



Be better prepared for inspections

## Joseph Gallo Farms Program First to Receive IDFA HACCP Certification

The cheese plant of Joseph Gallo Farms, Atwater, Calif., recently became the first dairy plant to have its HACCP program certified under the IDFA HACCP Certification Program. Gallo's success started with the training of two of its quality assurance managers at an IDFA HACCP workshop, continued with a review of the plant's written HACCP programs, and was cemented by passing a rigorous on-site audit.

"The key to Gallo's success was the extensive effort made by their staff and the commitment from management to safe, high-quality cheese products. Every step of the way, Gallo was ready to meet the rigorous criteria in the IDFA HACCP Certification Program," said IDFA Senior Director of Regulatory Affairs Allen Saylor, who leads IDFA's HACCP efforts.

He also noted that "this HACCP Certification will provide extra assurance to Gallo's customers that the cheese products they are buying are the result of a comprehensive food safety program that exceeds industry standards and regulatory requirements."

The three-level IDFA HACCP Certification Program is the only initiative of its kind that is targeted specifically for the dairy industry. The program incorporates elements of HACCP employee training, assistance in the development of HACCP written documents, use of computer software to record and document the plant's HACCP program, an on-site audit of the implemented HACCP program, and ongoing consultation.

Joseph Gallo Farms completed the Program Certification level, which covers a plant's program. About 30 industry professionals have been individually certified through the IDFA HACCP program. IDFA developed the three levels of its program based on input from members, as well as from experience gained by its participation in the development of a Grade A HACCP program under the National Conference on Interstate Milk Shipments (NCIMS). In addition, IDFA aggressively advocates the industry's views to the Food and Drug Administration (FDA) regarding the training, interpretation and implementation of the agency's juice HACCP regulations.

For more information on the IDFA HACCP Certification Program, visit [www.IDFAhaccp.org](http://www.IDFAhaccp.org), or contact Allen Saylor at [asaylor@idfa.org](mailto:asaylor@idfa.org), 202/220-3544.

# # #

Posted August 2, 2004

## The following articles are from: The National Dairy Council

### New Research Shows Increased Dairy Intake Is Associated With Lower Body Fat During Adolescence

Rosemont, Ill. (August 2, 2004)– A new study published in the August issue of the *Journal of Nutrition* found that adolescent girls who consumed more dairy weighed less and had less abdominal fat. The same study concluded that higher soda intake among these girls was associated with greater body fat. The study participants were healthy female Asian and Caucasian adolescents 9-14 years old.

"We wanted to identify dietary factors to help reverse the growing rate of childhood obesity in this country," said lead researcher Rachel Novotny, Ph.D., R.D., professor, University of Hawaii. "It didn't take much, just an extra glass of milk or a cup of yogurt was associated with lower body fat in teens. Our study found that adolescent girls who ate an additional serving of dairy had significantly lower body fat, when age, ethnicity, growth stage, activity level, and calorie intake were the same."

This study joins a growing body of research that supports the link between dairy intake and weight management. Health professionals recommend that Americans get three to four servings of dairy foods daily, which are rich in calcium, vitamin D, potassium and six other essential nutrients.

Visit [nationaldairycouncil.org](http://nationaldairycouncil.org) for more information on the health benefits of dairy foods. For nutrition tips and great-tasting dairy recipe ideas, visit [3aday.org](http://3aday.org)

# # #

The National Dairy Council® was founded in 1915 and conducts nutrition education and nutrition research programs through national, state and regional Dairy Council organizations, on behalf of America's dairy farmers.

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**Source:** Novotny, R, et al. "Dairy Intake Is Associated with Lower Body Fat and Soda Intake with Greater Weight in Adolescent Girls." *Journal of Nutrition*. 2004; 134(8).

**Editor's Note:** For more information about the study or to schedule an interview with a National Dairy Council spokesperson please call the NDC Media Hotline at (312) 240-2880 or email [ndc@dairyinfo.com](mailto:ndc@dairyinfo.com). The NDC Hotline is staffed by a registered dietitian between 10 a.m. – 6 p.m. EST, Monday – Friday, excluding holidays.

### Wendy's "Milks" its Menu to Offer Healthy Beverage Choices for Kids National Dairy Council Honors Wendy's as First Restaurant Chain to Introduce 3-A-Day of Dairy

Rosemont, Ill., (July 20, 2004) – This summer, Wendy's will begin offering reduced fat (2 percent) white and lowfat (1 percent) chocolate milk in 8-ounce, plastic containers as an alternative Kids' Meal beverage. Wendy's will be the first quick-service restaurant chain to feature the National Dairy Council's 3-A-Day of Dairy logo on its milk packaging.

"We're excited that Wendy's is offering new appealing milk choices to give kids a great tasting beverage that also delivers a powerful and unmatched nutrient package," says Paul Rovey, chairman of Dairy Management, Inc., the planning and management organization for the National Dairy Council. "Two out of three school-aged children currently miss out on the recommended three servings of dairy a day. By including the 3-A-Day logo on their milk labels, Wendy's is helping to remind families to eat 3-A-Day of Dairy – three daily servings of milk, cheese or yogurt."

"We received very positive comments from parents and children during the test phase," said Kathie Chesnut, Wendy's executive vice president of business and concept development. "More than ever, parents are looking for additional nutritious choices for their children, and the option to substitute milk in our Kids' Meal is something they appreciate."

Wendy's new menu offering is in line with recent dairy research. A year-long study involving more than 100,000 elementary and secondary school kids found that kids consumed more milk when it was offered cold in different flavors and fun, grab-and-go containers. <sup>1</sup>

"Milk is an important part of kids' diets. It tastes great and packs nutrients they need, including calcium for strong bones and protein for energy and muscle development," says Susan Laramée, registered dietitian and president of the American Dietetic Association. "It's great to see more restaurants like Wendy's help kids meet the recommended three servings of dairy a day."

*Wendy's Milks/Add one*

Visit [www.3aday.org](http://www.3aday.org) for more information on Wendy's new single-serve milks, a chance to win Wendy's giveaways, great-tasting dairy recipes and to sign up for *Get 3!*, 3-A-Day of Dairy's e-newsletter filled with nutrition advice and subscriber-only freebies.

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## **New Study: Drinking Milk Daily May Lower Colon Cancer Risk**

**Rosemont, Ill.**, July 9, 2004 – A study in the latest issue of the *Journal of the National Cancer Institute* found that increased consumption of milk and calcium were related to lower risk of colon cancer. People who consumed one glass or more of milk per day lowered their risk of colon cancer – the third most common cancer worldwide – by 15 percent compared to those who drank less than one-third cup of milk per day. Researchers pooled results of ten prospective studies in North America and Europe, totaling more than half a million people, nearly 5,000 of whom eventually got colorectal cancer.

"This is an exciting analysis because it contributes to previous research on the topic," said Stephanie Smith, M.S., R.D. National Dairy Council. "Earlier studies have found that increasing calcium consumption from sources including milk, cheese and yogurt may reduce the risk of colon cancer by slowing the abnormal growth of cells that eventually lead to colon cancer."

Health professionals recommend that Americans get 3 to 4 servings of dairy foods daily to get the calcium, vitamin D, potassium and other nutrients they need. In addition to nine essential nutrients, dairy foods contain compounds such as conjugated linoleic acid (CLA) and lactoferrin, which have been found to have anti-cancer properties. Visit [nationaldairycouncil.org](http://nationaldairycouncil.org) for more information on the health benefits of dairy foods. For nutrition tips and easy dairy recipe ideas, visit [3aday.org](http://3aday.org).

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The National Dairy Council® was founded in 1915 and conducts nutrition education and nutrition research programs through national, state and regional Dairy Council organizations, on behalf of America's dairy farmers.

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**Source:** Cho E, et al. "Dairy Foods, Calcium, and Colorectal Cancer: A Pooled Analysis of 10 Cohort Studies." *Journal of the National Cancer Institute*. 2004; 96(13):1015-1022.

## **New Study Shows 3-4 Servings of Dairy Each Day Help Burn Fat**

"Dairy foods have a powerful, positive impact on weight loss," says lead researcher

ROSEMONT, Ill. (April 16, 2004) – In a 24-week study published today in *Obesity Research*, the official journal of the North American Association for the Study of Obesity, adults on a reduced-

calorie diet who ate 3-4 servings of dairy foods each day lost an average of 24 pounds, significantly more than those who also cut calories but consumed few or no dairy foods.

In fact, the study indicates that 3-4 daily servings of milk, cheese or yogurt help people lose more weight by helping them burn more fat in the abdominal region, when compared to those who just cut calories or took calcium supplements.[1] The mix of essential nutrients in dairy foods, including calcium and protein, appears to speed up metabolism and improve the body's ability to burn fat.

"The practical significance of this research is simple – people lose more weight on diets that include three servings of dairy than on diets that don't," said lead researcher Michael Zemel, Ph.D., professor of nutrition, director of the Nutrition Institute, University of Tennessee. "By reducing body fat in the abdominal region, people may also reduce their risk of developing several chronic diseases, including heart disease and hypertension."

### **The Dairy Advantage**

Obese adults were placed in one of three groups: one low in calcium and dairy, one high in calcium supplements but low in dairy, and one high in dairy – at least 3-4 servings of milk, cheese or yogurt every day. Each person, regardless of their calcium/dairy group, consumed a diet that was 500 calories lower than their normal caloric intake (see sidebar for more details). Participants were able to choose from fat-free, lowfat and regular dairy products.

After 24 weeks those on the high-dairy diet lost the greatest percentage of total body weight (11%), significantly more than those in the high-calcium supplemented group (9%) and the low-calcium/low-dairy group (6%). Fat loss followed a similar trend, with people on the high-dairy diet losing significantly more body fat than those in the other two groups, specifically in the abdominal region.

"It's clear from our research that the unique combination of essential nutrients in dairy foods has a powerful, positive impact on metabolism and weight loss," said Zemel.

### **The Dairy-Weight Loss Connection**

Dr. Zemel discovered the dairy-weight loss connection 14 years ago when he was studying hypertension among African-American men and noticed that those who consumed at least two servings of yogurt daily lost an average of 11 pounds during a one-year study without reducing calories. Other researchers have documented similar findings and more research is underway to better identify the role dairy foods play in weight loss.

"The fact that three to four servings of dairy foods daily may help with weight loss, in addition to building strong bones, is great news because people love to eat milk, cheese and yogurt," said Ann Marie Krauthem, registered dietitian, National Dairy Council. "No matter what diet plan people follow, they should make sure to get at least three servings of dairy foods each day because research shows dairy actually signals the body to burn more fat."

### **Dairy reduces weight and disease risk**

These findings come at a time when 64 percent of Americans are overweight or obese, meaning most Americans are at risk for weight-related health conditions such as diabetes and increased blood pressure.[2] According to the U.S. Surgeon General, in 2000 the total cost of obesity was estimated to be \$117 billion.[3] A recent research review of over 90 studies suggests that increasing dairy food intake to 3-4 servings each day as part of a lower-calorie, nutrient-rich diet could lead to a significant reduction in chronic disease risk, including obesity, diabetes and hypertension, resulting in cost savings of more than \$200 billion over five years.[4]

For more information about dairy's role in weight management and weight loss, visit [healthyweightwithdairy.com](http://healthyweightwithdairy.com) or [nationaldairycouncil.org](http://nationaldairycouncil.org)

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## **McDonald's® Milk Jugs Give Moms a Choice to Feel Good About in a Package Kids Love**

Kids Found to Drink More Milk When Offered in Different Flavors and Fun Containers

BENRosemont, Ill., May 24, 2004 – The National Dairy Council celebrates McDonald's New Happy Meal® Choices including lowfat (1 percent) white and chocolate milk in fun Milk Jug packaging. The

new containers, featuring Ronald McDonald® surfing on a wave of milk, are single serve plastic, resealable bottles that are easy for small hands to hold and convenient for families on the go. Starting in June, McDonald's will be the first fast food restaurant to offer milk in this packaging nationwide.

The new menu option is in line with recent dairy research. A year-long study involving more than 100,000 elementary and secondary school kids found that kids consumed more refreshing milk when it was offered cold in different flavors and fun, grab-and-go containers<sup>1</sup>.

"Helping kids get nutrition, taste and variety all in one new package is important to America's dairy farmers, and we're proud to be working with McDonald's to help make milk a part of consumers' balanced lifestyle plans," said Tom Gallagher, CEO of Dairy Management Inc.

"Sales of the Milk Jugs in our test markets have been brisk," said Lisa Frick, director of Menu Management at McDonald's. "The results are telling us that moms and kids like this new offering."

According to government recommendations, children ages 4-8 need 800 milligrams of calcium a day or the equivalent of three daily servings of milk, cheese or yogurt. The National Dairy Council encourages parents to choose milk when ordering Happy Meals for their kids since milk delivers nine essential nutrients, including about a third of their daily calcium needs.

"Dairy foods like milk provide a powerful nutrient package. Milk offers the taste that kids love along with the nutrients that growing bodies need - like calcium for strong bones and protein for energy and muscle development," said Connie Diekman, M.Ed., R.D., director of University Nutrition at Washington University, St. Louis and a member of the American Dietetic Association. "We are excited that McDonald's is doing its part to help kids get on their way to the recommended three servings of dairy each day."

The New Happy Meal Choices, including Milk Jugs, will be available at participating McDonald's restaurants June 11.

<sup>1</sup>Roper ASW (2002). *School Milk Pilot Study: Sales Test*, September 2001-June 2002, Dairy Management Inc. and American School Food Service Association, Unpublished.

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## **New Study Finds Children Who Avoid Milk are More Likely to Break Bones, Be Overweight**

[First study to link lack of milk to increased fracture rates](#)

Rosemont, Ill., February 23, 2004 – A new study in the February issue of the *Journal of the American Dietetic Association* found that children who avoided milk were more likely to experience fractures and be overweight than a comparison group of more than 1,000 similarly aged children. The study is the first to link milk avoidance to increased fracture rates.

"Children who regularly avoided milk had lower bone mineral density and weighed more, two factors that increase fracture risk," said lead researcher Ailsa Goulding, Ph.D., FACN, professor, University of Otago, New Zealand. "Children and adolescents need 3-4 servings of dairy foods each day to help prevent broken bones now and chronic conditions like osteoporosis as adults."

The study compared the fracture histories of 50 children who avoided drinking milk for extended periods of time to a group of 1,000 children from the same city, Dunedin, New Zealand. The children who avoided milk did not eat calcium-rich food substitutes or supplements. Nearly one in three of the young milk-avoiders had broken a bone before they were eight years old, frequently from slight trauma such as a minor trip or fall. A recent report documented a significant increase in the number of forearm fractures in adolescent boys and girls over the last 30 years [2].

"Dairy foods like milk, cheese and yogurt are packed with nine essential nutrients that are necessary for strong bones, healthy teeth and better bodies," said Connie Diekman, R.D., director, University Nutrition, Washington University, St. Louis. "With the wide variety of dairy foods available, from low fat flavored milks to yogurt snacks and string cheese, parents and kids can choose from a number of convenient options for every taste and budget."

Dairy foods provide three quarters of the calcium in the diets of children and adolescents. The daily recommended intake (DRI) for calcium in adolescents aged 9-18 years is 1,300 mg – the equivalent of four servings of milk, cheese or yogurt. For children ages 4-8, the DRI for calcium is 800 mg or three servings every day.

For more information on the benefits of dairy foods please visit [nationaldairycouncil.org](http://nationaldairycouncil.org). For nutrition tips and easy recipe ideas, visit [3aday.org](http://3aday.org).

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## **Kids' Diets Win When Flavored Dairy Products Replace Sodas and Fruit Drinks**

*New study finds flavored milks and yogurts are building blocks for better nutrition*

Rosemont, Ill., January 12, 2004 – An analysis of the diets of more than 3,000 children published in the January 2004 issue of the *Journal of Adolescent Health* shows a positive effect on children's diets when kids choose flavored milks and yogurts instead of sodas and sweetened drinks.

The study showed that children ages 6-17 who consumed more than 6-8 ounces of flavored dairy products, such as milks, yogurts, ice creams and puddings, each day had a better diet than those who regularly drank sodas and sweetened fruit drinks. Those consuming more flavored dairy got more than two servings of dairy foods and took in more calcium, folate and iron, fewer added sugars and less saturated fat overall than children who drank more than 16-25 ounces of sodas and sweetened fruit drinks every day. The analysis also showed that only children ages 6-11 who did not consume sodas and sweetened drinks got the recommended amount of calcium each day.

"When sodas and fruit drinks replace dairy foods in the diet, it's hard for children to get the key nutrients they need for growth and development," says Dr. Rachel Johnson, professor of nutrition at the University of Vermont, and one of the study's authors. "Our analysis shows that flavored dairy products like milks and yogurts are a great addition to a child's diet because they are packed with important nutrients and have fewer added sugars than the soft drinks they are replacing."

This study coincides with the American Academy of Pediatrics' (AAP) newest policy statement which recommends that health professionals work to restrict the sale of sweetened drinks in schools in order to help prevent some of the health problems associated with too many sodas and sweetened beverages.<sup>1</sup> The AAP recommends replacing sweetened drinks with real fruit and vegetable juices, water and lowfat white or flavored milk. The policy also notes that as sweetened drink consumption rises, milk consumption declines and milk is the primary source of calcium in the diets of children and adolescents.

Calcium is especially important for adolescents. Because almost 45 percent of skeletal mass is formed between the ages of nine and 18, health professionals recommend at least 1,300 mg of calcium every day for this age group; the equivalent of four servings of milk, cheese or yogurt.

### **Healthy Choices for Life**

"Parents and educators need to help kids learn to make healthy eating choices now, which will lead to healthier lifestyles as adults," says Terri Verason, registered dietitian, National Dairy Council. "Getting your kids to eat three to four servings of dairy is easier than you think, especially with new on-the-go packaging and kid-friendly flavors like strawberry, chocolate-banana, and cookies'n cream making their way into the marketplace."

Verason recommends the following tips to boost dairy and calcium intake in kids:

- **Convenience counts:** Single-serve, re-sealable plastic bottles are great for today's busy lifestyles.
- **Serve it cold:** Results from a 2002 School Milk Pilot Test showed that kids were more likely to choose regular and flavored milks if the milks were served at colder temperatures and in plastic packaging.<sup>2</sup>

- **Look for the logo:** Milk, cheese and yogurt products with the 3-A-Day of Dairy logo are guaranteed to contain at least 20 percent of the daily calcium requirement.

For more information on the nutritional benefits of dairy foods, visit [www.nationaldairyCouncil.org](http://www.nationaldairyCouncil.org). In addition, parents and educators can get fun recipes and tips on how to get 3-A-Day of Dairy at [www.3aday.org](http://www.3aday.org).

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## **Lactose Lesson: Don't Ditch Dairy**

### **New Study Shows African American Teens Can Get the Calcium They Need Through Dairy**

ROSEMONT, Ill., May 1, 2000 – Lactose maldigestion or trouble digesting lactose, a natural sugar found in milk, does not necessarily mean having to give up dairy products, according to new research published in the Journal of The American Dietetic Association.

"Misunderstanding about lactose maldigestion is at an all-time high, including within the African American community," said co-author of the study Dennis Savaiano, Ph.D., Professor of Foods and Nutrition, Purdue University. "All too often, this misunderstanding leads people to unnecessarily cut dairy out of the diet, eliminating a major source of calcium and other essential nutrients."

Researchers examined the effects of a dairy-rich diet for 21 consecutive days on African American teens who did not like milk and as a result were non-milk drinkers. In the study, participants consumed four servings of dairy each day, about the amount needed to meet current calcium recommendations for teenagers (1,300 mg/day). The results showed that the African American teen girls were able to consume this dairy-rich diet comfortably. In fact, one common test for lactose maldigestion suggested that over the three weeks, the girls' ability to digest lactose actually improved.

"This ability to adapt to dairy is exciting because African Americans as well as other minority groups often fall short on calcium intakes – putting them at increased risk for osteoporosis and hypertension," said Gregory D. Miller, Ph.D., vice president of nutrition research, National Dairy Council. "These findings show that all minorities, including teens, can and should consume dairy to meet current calcium recommendations."

### **Milk Matters for Teens**

Today's teenagers are not getting enough calcium-rich milk in their diets. According to NHANES data, teen girls are averaging about 800 mg of calcium per day, well below the recommended 1,300 mg of calcium per day. And, African American teen girls are getting even less calcium per day – about 750 mg. "Since nearly half of all bone is formed during the teen years, it's a crucial time for teens to get enough calcium from milk to build and maintain strong, healthy bones," states Miller.

### **TIPS FOR TOLERANCE FOR TEENS:**

1. Work it in. Start with a smaller portion and slowly increase the serving size.
2. Pair the dairy. Drink milk with other foods, not on an empty stomach.
3. Say cheese. Cheese (e.g. Cheddar, Colby, Swiss and Parmesan) has very low levels of lactose, so it goes easy on the stomach.
4. Get a little "culture." Cultured milk products such as yogurt contain "friendly" bacteria that help digest lactose.