Nutrient Value of Dry Milk

Milk is a basic food that everyone in the family needs, every day, to supply calcium for strong bones and teeth. It also provides high-quality protein, riboflavin, and other vitamins and minerals.

Recommended Servings Per Day
1 serving = 1 cup milk or yogurt, or 1 1/2 ounces natural cheese

<table>
<thead>
<tr>
<th>Age</th>
<th>Servings Per Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children 2-8</td>
<td>2-3</td>
</tr>
<tr>
<td>Children 8-18</td>
<td>4</td>
</tr>
<tr>
<td>Adults</td>
<td>3</td>
</tr>
<tr>
<td>Pregnant and Nursing Women, Adults Over 50 Years</td>
<td>4</td>
</tr>
</tbody>
</table>

Increased consumption of soft drinks and reduced consumption of fluid milk leads to osteoporosis and tooth decay, especially during the teen years when bones are developing. Dry milk provides all of the same nutrients as liquid milk. Adding extra amounts of dry milk is an excellent, economical way to increase the nutritive value of many foods.

Types of Dry Milk

Both regular and instant dry milk are made from fresh, pasteurized, vitamin D milk that has been dried by spraying it into hot air. Instant milk has been further processed so that it mixes with water more easily than regular dry milk. They have the same nutrients.

The water and butterfat have been removed from nonfat dry milk. It contains the same vitamins and minerals as regular dry milk but has no fat and fewer calories.

Storage of Dry Milk

Dry milk should have a mild flavor and aroma. After long periods of storage, some milk powder may develop slight off flavors. These changes usually do not affect the vitamin and protein quality of the milk. Dried whole milk, because of the fat present, will not store as well as nonfat dry milk.

Temperature is the most important factor in the shelf life of dry milk. Warm temperatures, moisture, oxygen, and light can speed up the chemical changes that affect the flavor of dry milk. Moisture can also cause dry milk to clump. Other foods with a strong odor, such as garlic, onions, spices, and flavorings may affect the flavor of dry milk.

- Store dry milk in an air-tight and waterproof container
- Place in a cool, dry location
- Keep away from foods with strong odors
- Use within a few months.

Using Dry Milk

Making Liquid Milk

<table>
<thead>
<tr>
<th>Dry Milk</th>
<th>Water</th>
<th>Liquid Milk</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/3 cup</td>
<td>1 cup</td>
<td>1 cup</td>
</tr>
<tr>
<td>1 1/3 cups</td>
<td>4 cups</td>
<td>1 quart</td>
</tr>
</tbody>
</table>

Make 1 quart of liquid milk by mixing or shaking 1-1/3 cups of instant dry milk with 4 cups of water. To reconstitute regular dry milk, beat the dry milk with about half of the water until the lumps dissolve. Then stir in the rest of...
the water. The liquid milk should be covered, stored in the refrigerator and used within three to five days. The flavor of liquid milk made from dry milk improves after it has been refrigerated for a few hours. Many people prefer to mix equal amounts of reconstituted dry milk with fresh milk for drinking. Liquid milk made from dry milk can be used in cooking the same as fresh milk.

When baking with dry milk, you can add the dry milk to your dry ingredients and add the water to the other liquid ingredients. Use 1/3 cup dry milk and 1 cup of water for every cup of milk in the recipe. If you have dry milk that has developed a slight off flavor, it can be used in baked products or mashed potatoes.

Try some of the following recipes.

**Cream Soup Mix**

2 cups nonfat dry milk  
1/4 cup chicken bouillon powder  
3/4 cup cornstarch  
1 tsp dried basil (optional)  
2 T dried minced onion flakes  
1/4 tsp dried thyme (optional)  
1/2 tsp ground black pepper

1. Combine nonfat dry milk, cornstarch, onion flakes, pepper and chicken bouillon. If desired, add basil and thyme. Mix well and place in an airtight container. Store in a cool, dry place away from strong odors.
2. When using the mix, combine 1/3 cup of mix with 1-1/4 cups of water in a saucepan. Cook and stir until thickened.
3. Use instead of canned, condensed cream soup. When substituting dry soup mix for 1 can of condensed cream soup (undiluted), stir 1-1/4 cups of water into 1 cup of soup mix.
4. For variations, melt cheese into the soup, or add cooked broccoli, cauliflower, potatoes, other vegetables, or chicken.

**Nutrients Per Serving:**

- Calories: 125
- Saturated Fat: 0 g
- Iron: 0 mg
- Protein: 6 g
- Cholesterol: 3 mg
- Calcium: 220 mg
- Carbohydrates: 22 g
- Vitamin A: 130 RE
- Sodium: 1660 mg
- Total Fat: 0 g
- Vitamin C: 1 mg
- Dietary Fiber: 0 g

Recipe provided by [www.allrecipes.com](http://www.allrecipes.com)

**Baking Mix**

4 cups all-purpose flour  
4 cups whole wheat flour  
1-1/3 cups nonfat dry milk  
1/4 cup baking powder  
1 teaspoon salt

1. Mix all ingredients together  
2. Keep in airtight container, away from heat and light.  
3. Stir mix before using.

**Nutrients Per Serving:**

- Calories: 420
- Saturated Fat: 0.5 g
- Iron: 5 mg
- Protein: 17 g
- Cholesterol: 0 mg
- Calcium: 150 mg
- Carbohydrates: 87 g
- Vitamin A: 71 RE
- Sodium: 630 mg
- Total Fat: 1.5 g
- Vitamin C: 0 mg
- Dietary Fiber: 8 g
Biscuits

Makes 12 biscuits

2 cups baking mix
1/4 cup shortening
3/4 cup milk (fresh or reconstituted dry milk)

1. Preheat oven to 450° F.
2. Cut shortening into baking mix until mixture resembles coarse crumbs, using a pastry cutter or two knives used scissor fashion.
3. Add milk and mix just until mixture forms a soft dough.
4. Turn dough onto a surface sprinkled with additional baking mix and knead three to six times, just until well mixed.
5. Pat dough 1/2 inch thick.
6. Cut out biscuits with a 2-inch biscuit cutter.
7. Bake on an ungreased baking pan for 12 to 15 minutes, until golden.

Nutrients Per Serving:
Calories 122
Saturated Fat 1 g
Iron 6 %
Protein 4 g
Cholesterol 0 mg
Calcium 12 %
Carbohydrates 17 g
Vitamin A 0 %
Sodium 191 mg
Total Fat 4 g
Vitamin C 1 %
Dietary Fiber 2 g

Basic Muffin Recipe

Makes 10 muffins

2 cups baking mix
5 tablespoons granulated sugar
1 egg
1 cup milk (fresh or reconstituted)
4 tablespoons melted butter

1. Preheat oven to 400° F.
2. Sift baking mix into a large bowl.
3. In another bowl, beat together the egg, milk, and melted butter.
4. Pour the egg mixture into the flour mixture. Stir quickly and just enough to moisten the dry ingredients. Do not overmix- The batter will be lumpy.
5. Fill greased muffin tins.
6. Bake for 22 minutes or until the muffins are golden brown.

Notes: Use this recipe as a base to add your own favorite ingredients. Ideas include nuts, raisins or other dried fruit, chocolate chips, coconut, and 1 teaspoon cinnamon + 1/2 teaspoon vanilla.

Nutrients Per Muffin:
Calories 160
Saturated Fat 2.5 g
Iron 6 %
Protein 5 g
Cholesterol 35 mg
Calcium 15 %
Carbohydrates 24 g
Vitamin A 4 %
Sodium 250 mg
Total Fat 5 g
Vitamin C 0 %
Dietary Fiber 2 g
Pumpkin Muffins

Makes 12 muffins

2 cups baking mix
2 teaspoons pumpkin pie spice (or 1 tsp ground cinnamon + 1/4 tsp ground ginger + 1/4 tsp ground nutmeg + 1/8 tsp ground cloves)
1/4 cup softened butter or margarine
1/2 cup granulated sugar
1 egg
1 cup canned pumpkin
1/2 cup evaporated milk
1/4 cup corn oil

1. Heat oven to 375° F.
2. Sift baking mix and spices together into a medium bowl.
3. In a large bowl, beat together butter and sugar until they are creamy.
4. Add egg, pumpkin, evaporated milk, and corn oil. Beat on high speed until the mixture is light and fluffy.
5. Add the flour mixture and stir just until the dry ingredients are moistened.
6. Pour into greased muffin tins. Bake for 25 or 30 minutes or until a tester comes out clean.

Notes: Cooked, mashed winter squash or sweet potatoes may be substituted for the pumpkin. Banana nut muffins may be made by substituting 2 mashed bananas and 1/2 cup chopped nuts for the pumpkin and omitting the spices. Try other variations.

The batter may be baked in a greased loaf pan. Bake until bread pulls away from the side of the pan and a toothpick inserted into the center of the bread comes out clean.

Evaporated Skim Milk

Makes 1 cup

1. Stir 1 cup water into 2/3 cup nonfat dry milk.

Nutrients Per Cup:
- Calories: 200
- Saturated Fat: 0 g
- Iron: 0 %
- Protein: 20 g
- Cholesterol: 10 mg
- Calcium: 70 %
- Carbohydrates: 30 g
- Vitamin A: 0 %
- Sodium: 310 mg
- Total Fat: 0 g
- Vitamin C: 6 %
- Dietary Fiber: 0 g
**Chicken and Black Pepper Dumplings**

Makes 4 servings

2/3 cup nonfat dry milk + 1-1/2 cups water
3/4 cup canned green peas
3/4 cup canned carrots
1 cup cooked chicken (5 ounces), cut up
1 can (10.75 ounces) condensed chicken
mushroom soup (or 1 cup cream soup mix and
1-1/4 cup water)
1 cup baking mix
2 tablespoons nonfat dry milk + 1/3 cup water,
additional black pepper to taste parsley
(optional)

1. Heat reconstituted nonfat dry milk, peas,
carrots, chicken and soup to boiling in a
3-quart saucepan.
2. In a small bowl, combine baking mix, the
additional reconstituted nonfat dry milk,
and pepper until soft dough forms. Drop
dough by 8 spoonfuls into chicken
mixture.
3. Cook, uncovered, over low heat 10
minutes. Cover and cook 10 minutes
longer or until dumplings are done.
Sprinkle with parsley, if desired.

**Nutrients Per Serving:**

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calories</td>
<td>320</td>
</tr>
<tr>
<td>Saturated Fat</td>
<td>4g</td>
</tr>
<tr>
<td>Iron</td>
<td>2mg</td>
</tr>
<tr>
<td>Protein</td>
<td>16g</td>
</tr>
<tr>
<td>Cholesterol</td>
<td>30mg</td>
</tr>
<tr>
<td>Calcium</td>
<td>210mg</td>
</tr>
<tr>
<td>Carbohydrates</td>
<td>33g</td>
</tr>
<tr>
<td>Vitamin A</td>
<td>570 RE</td>
</tr>
<tr>
<td>Sodium</td>
<td>1300mg</td>
</tr>
<tr>
<td>Total Fat</td>
<td>13g</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>3mg</td>
</tr>
<tr>
<td>Dietary Fiber</td>
<td>2g</td>
</tr>
</tbody>
</table>

*Recipe provided by Betty Crocker Kitchens*

**Meatballs**

Makes about 20 meatballs

1/3 cup water
2/3 cup nonfat dry milk
2 slices bread, torn into small pieces
2 tablespoons dried minced onion
1 egg
1/2 teaspoon salt
1 pound lean ground beef

1. Preheat oven to 350°F. Grease a rimmed
baking sheet or shallow pan with nonstick
cooking spray.
2. In a large bowl, combine water and nonfat
dry milk. Add bread, onion, egg and salt.
Stir to combine.
3. Add ground beef and blend just until well
mixed.
4. Shape meat mixture into 1-inch balls.
Place on baking sheet. (For meatloaf, pat
mixture into a loaf pan and bake at 350°F
for about 50 minutes or until a meat
thermometer reads 160°F in the center of
the loaf.)
5. Bake meatballs for 30 minutes or until
meat thermometer registers internal
temperature of 160°F.

**Nutrients Per Serving:**

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calories</td>
<td>260</td>
</tr>
<tr>
<td>Saturated Fat</td>
<td>7g</td>
</tr>
<tr>
<td>Iron</td>
<td>2mg</td>
</tr>
<tr>
<td>Protein</td>
<td>18g</td>
</tr>
<tr>
<td>Cholesterol</td>
<td>90mg</td>
</tr>
<tr>
<td>Calcium</td>
<td>120mg</td>
</tr>
<tr>
<td>Carbohydrates</td>
<td>9g</td>
</tr>
<tr>
<td>Vitamin A</td>
<td>80 RE</td>
</tr>
<tr>
<td>Sodium</td>
<td>250mg</td>
</tr>
<tr>
<td>Total Fat</td>
<td>17g</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>1 mg</td>
</tr>
<tr>
<td>Dietary Fiber</td>
<td>1g</td>
</tr>
</tbody>
</table>

*Recipe provided by Washington State Dairy Council*
Creamy Banana Walnut Oatmeal

Makes 1 serving

1/3 cup nonfat dry milk + 1 cup water
1/2 cup quick-cooking oats
1/2 ripe banana, mashed
1/2 tablespoon chopped walnuts

1. Boil water.
2. Stir in oats and nonfat, dry milk.
3. Cook and stir, without boiling, about one minute.
4. Stir in mashed banana until creamy.
5. Top with walnuts and serve. (For extra zip, use your favorite flavored oatmeal in this recipe.)

Nutrients Per Serving:
Calories 330
Total Fat 5 g
Saturated Fat 1 g
Cholesterol 0 mg
Sodium 140 mg
Carbohydrate 59 g
Dietary Fiber 6 g
Protein 16 g
Vitamin A 2%
Calcium 35%
Iron 15%

Recipe adapted from American Dairy Association.

Yogurt-Fruit Smoothie

Makes 2 servings

1/4 cup strawberry yogurt
1/3 cup nonfat dry milk
1/2 banana
3/4 cup orange juice
1/2 cup strawberries (optional)

1. Put ingredients into a blender or food processor and blend until smooth.

Nutrients Per Serving:
Calories 103
Total Fat 0.5 g
Cholesterol 3.7 mg
Sodium 101 mg
Vitamin A 412 micrograms
Calcium 239 mg
Iron 0.44 mg
Vitamin B6 0.07 mg
Zinc 0 mg

Recipe adapted from Cornell Cooperative Extension Family Living Program.
Café Mocha

Makes 2 servings

1/3 cup nonfat dry milk + 1 cup water
1 cup brewed coffee
4 tablespoons hot chocolate mix

2. Add coffee and hot chocolate mix. Stir well and heat to desired temperature.
3. Divide coffee mixture between two mugs. Top with nonfat whipped topping and cinnamon, if desired.
4. Café mocha may be served cold. It is excellent with a scoop of vanilla ice cream for a summer treat.

Nutrients Per Serving:
Calories 50
Saturated Fat 0 g
Iron 0 mg
Protein 4 g
Cholesterol 2 mg
Calcium 140 mg
Carbohydrates 7 g
Vitamin A 80 RE
Sodium 70 mg
Total Fat 0 g
Vitamin C 1 mg
Dietary Fiber 0 g


Peanut Butter Cup Milk

Makes 1 serving

1 tablespoon creamy peanut butter
2 tablespoons chocolate syrup
1/3 cup nonfat dry milk + 1 cup water

1. In a small bowl, whisk together peanut butter and chocolate syrup until smooth.
2. Whisk in reconstituted nonfat dry milk.
3. Pour into a glass and serve.

Nutrients Per Serving:
Calories 280
Saturated Fat 2 g
Iron 1 mg
Protein 13 g
Cholesterol 4 mg
Calcium 290 mg
Carbohydrates 39 g
Vitamin A 160 RE
Sodium 225 mg
Total Fat 9 g
Vitamin C 1 mg
Dietary Fiber 2 g

Sweet Potato Pudding

Makes 6 servings

2/3 cup nonfat dry milk  
2 cups water  
1 (15 ounce) can sweet potatoes, drained and mashed  
1 package instant vanilla pudding mix ground cinnamon (optional)

1. Reconstitute nonfat dry milk by mixing with water in a medium mixing bowl.  
2. Thoroughly mash sweet potatoes with a fork and add to milk.  
3. Stir well or whisk.  
4. Pour package of instant pudding into milk mixture and stir or whisk for two minutes.  
5. Chill and serve. Sprinkle top with cinnamon before serving (optional).

Nutrients Per Serving:

Calories 73  
Total Fat 0 g  
Sodium 104 mg  
Calcium 11%  
Vitamin C 8%  
Vitamin A 128%

Recipe adapted from University of Georgia, Cooperative Extension Service

Peanut Butter Balls

Makes about 6 dozen small cookies

2-1/2 cups crushed crunchy cereal (save half for coating)  
1 cup honey  
1 cup raisins  
1 cup chunky peanut butter  
1/4 cup nonfat dried milk

Mix 1 cup crushed crunchy cereal with the honey, raisins, peanut butter, and dried milk. Roll the mixture into 1-inch balls. Roll the balls in the remaining crushed cereal to coat. Refrigerate for at least one hour.

Nutrients Per Serving (2 cookies):

Calories 100  
Total Fat 3.5g (5%)  
Saturated Fat 0.5g (3%)  
Cholesterol 0 mg  
Sodium 70mg (3%)  
Carbohydrate 17g (6%)  
Fiber 3%  
Sugars 11g  
Protein 2g (3%)  
Vitamin A 4%  
Calcium 2%  
Vitamin C 4%  
Iron 2%

Revised by:

Jackie Walters, MBA, RD, LD, Extension Associate

Reviewed by:

Emma S. Walters, MS, RD, LD, Dietitian Consultant, Kentucky Cabinet for Health and Family Services  
Angela Ratliff, RD, LD, Dietetics Educator, Kentucky Cabinet for Health and Family Services  
Cynthia Sullivan, MS, RD, LD, WIC Nutrition Education Coordinator, Kentucky Cabinet for Health and Family Services

January, 2005

Educational programs of Kentucky Cooperative Extension serve all people regardless of race, color, age, sex, religion, disability, or national origin.