



VALUE ADDED DAIRY PRODUCTS AND THEIR NUTRITIONAL QUALITY



NATIONAL AGRICULTURAL VALUE CHAIN
DEVELOPMENT PROJECT

Introduction

Dairy products are defined as food products made from milk. The milk sources may be varied including cows, goats, sheep, buffalo, and in some countries, even camels and yak.

However, majority of the popular dairy value added products are made from cow milk. Common dairy products include; butter, butter milk role in the typical diet of many nations.

Nutrition profile of dairy products (Sourced from NCC Food and Nutrient Database and USDA nutrition database)

1. Butter

Butter is a high-fat dairy food made purely from churned milk or cream and is typically used as a spread or for pan-frying.

However, butter is easy to over-consume and is relatively high in saturated fat. Thus, it is important to stick to recommended serving sizes. Butter contains some nutritional value (vitamins A and D), but it is not particularly nutrient-rich.

One tablespoon (14.2g) of unsalted butter provides the following nutrients

Nutrient	Amount	% Daily Value
Calories	102 kcal	
Carbohydrates	0.01 g	0% DV

Nutrient	Amount	% Daily Value
Fiber	0 g	0% DV
Sugars	0.01 g	
Fat	11.5 g	14.7% DV
Saturated Fat	7.17 g	35.9% DV
Protein	0.12 g	0.2% DV
Cholesterol	30.5 mg	10.2% DV
Sodium	1.56 mg	0.1% DV

2. Buttermilk

Buttermilk is not quite as famous as its two namesakes, with butter and milk being far more prevalent. It is the leftover pale-yellow liquid after churning butter.

Buttermilk can be drunk by itself and works well as an ingredient in a marinade for meat. This is because buttermilk has a high proportion of lactic acid (hence the sour taste), which works well as a tenderizer.

Most modern buttermilk products have a bacterial culture (such as *Lactococcus lactis*) added to them, and they are known as cultured buttermilk.

Based on the 245-gram cup, buttermilk's nutritional profile is as follows:

Nutrient	Amount	% Daily Value
Calories	152 kcal	
Carbohydrates	12.0 g	4.4% DV
Fiber	0 g	0% DV
Sugars	12.0 g	
Fat	8.11 g	10.4% DV
Saturated Fat	4.66 g	23.3% DV
Protein	7.86 g	15.7% DV
Cholesterol	27 mg	9% DV
Sodium	257 mg	11.2% DV

3. Cheese

Cheese is delicious, and it is popular throughout the world. It is a fermented dairy product that comes in different shapes and sizes. While some cheese is hard with a strong flavour, others can be mild and soft. Interestingly, despite being a source of saturated fat, systematic reviews of observational studies consistently show cheese as being neutral or inversely associated with cardiovascular risk.

Cheese is generally an excellent source of protein, and its fat content will vary depending on the cheese variety.

Every country has its own particular varieties, and some of the most famous include:

- Cheddar (England)
- Camembert (France)
- Feta (Greece)
- Gorgonzola (Italy)
- Gruyere (Switzerland)
- Manchego (Spain)
- Mozzarella (Italy)
- Parmesan (Italy)
- Ricotta (Greece).

Cheddar cheese is one of the most popular cheeses in the world whose nutritional values for per ounce (28.35g) slice are as listed.

Nutrient	Amount	% Daily Value
Calories	115 kcal	
Carbohydrates	0.60 g	0.2% DV
Fiber	0 g	0% DV
Sugars	0.08 g	
Fat	9.46 g	12.1% DV
Saturated Fat	5.43 g	27.2% DV
Protein	6.78 g	13.6% DV
Cholesterol	27.7 mg	9.2% DV
Sodium	180 mg	7.8% DV

4. Clotted Cream

Clotted cream has its origins from England, where it was a traditional accompaniment for afternoon tea and scones. It is a delicious, extra-thick spreadable cream made by gently baking fresh heavy cream. As the cream heats, it loses moisture and thickens, and because of this, it also has a higher fat content than regular cream.

Based on weight, clotted cream is approximately 55% fat.

The nutritional profile per ounce (28.35g) serving.

Name	Amount	% Daily Value
Calories	140 kcal	
Carbohydrates	1 g	0.4% DV
Fiber	0 g	0% DV
Sugars	1 g	
Fat	15 g	19.2% DV
Saturated Fat	10 g	50% DV
Protein	0 g	0% DV
Cholesterol	45 mg	15% DV
Sodium	5 mg	0.2% DV

5. Cottage Cheese

Cottage cheese is a kind of high-protein, curd-based cheese. Its' flavour is mild but with a slightly sour taste.

One advantage of cottage cheese is its exceptionally protein-dense, especially the lower milkfat variants. For example, 2% milkfat cottage cheese is low in calories, carbohydrates and fat and provides over 12 grams of protein per 100 grams. This protein density makes it an excellent option for anyone looking to increase their protein intake. As a result, it enjoys popularity with bodybuilders and dieters.

Nutrition profile for a 220-gram cup of 2% milkfat cottage cheese is as follows:

Nutrient	Amount	% Daily Value
Calories	180 kcal	
Carbohydrates	9.48 g	3.4% DV
Fiber	0 g	0% DV
Sugars	9.02 g	
Fat	5.06 g	6.5% DV



Nutrient	Amount	% Daily Value
Saturated Fat	2.77 g	13.9% DV
Protein	24.2 g	48.4% DV
Cholesterol	26.4 mg	8.8% DV
Sodium	706 mg	30.7% DV

6. Cream

Cream is a high-fat dairy product consisting of the butterfat layer at the top of milk before the milk's homogenization process. There are several varieties of creams and the fat percentage vary from 18% to 55%, depending on the specific type.

Like butter, cream provides a reasonable source of fat-soluble vitamins A and D. However, the biggest "positive" has to be the taste. Cream makes just about anything taste better. On the negative side, cream contains a significant amount of saturated fat (and calories) and is not particularly nutrient-rich.

Nutritional profile per tablespoon (15g) of heavy cream

Name	Amount	% Daily Value
Calories	51 kcal	
Carbohydrates	0.43 g	0.2% DV

Name	Amount	% Daily Value
Fiber	0 g	0% DV
Sugars	0.43 g	
Fat	5.42 g	6.9% DV
Saturated Fat	3.45 g	17.3% DV
Protein	0.43 g	0.9% DV
Cholesterol	17 mg	5.7% DV
Sodium	4 mg	0.2% DV

7. Cream Cheese

Cream cheese is a delicious, soft, and spreadable cheese made from milk and cream. It has many different uses, and cream cheese often appears in recipes for anything from cheesecakes to baked potatoes. However, it is worth noting that there are many different cream cheese brands, and the relative nutritional merits vary by product.

Some cream cheese is 100% full-fat cheese with a bit of salt, while others are lower-fat and even high-protein options.

Nutritional values for full-fat cream cheese per ounce (28.35g) serving

Name	Amount	% Daily Value
Calories	84 kcal	
Carbohydrates	0.99 g	0.4% DV
Fiber	0 g	0% DV

Name	Amount	% Daily Value
Sugars	0.99 g	
Fat	8.11 g	10.4% DV
Saturated Fat	5.1 g	25.5% DV
Protein	2.01 g	4% DV
Cholesterol	25.5 mg	8.5% DV
Sodium	124 mg	5.4% DV

8. Ghee

Ghee is a traditional Indian food that has been around for centuries. This particular dairy product is a higher-fat and creamier version of butter and tastes great too. The preparation method of making ghee is simple and doing it at home is fairly easy.

Firstly, it involves gently simmering butter on the stove until the proteins and sugars separate as solids from the butter liquid. The liquid can then be poured into a jar through a mesh sieve and will re-solidify as it cools. Compared to cooking with regular butter, it is harder to burn ghee due to the lack of sugars and proteins in it.

Nutritional profile per tablespoon (13g) serving

Name	Amount	% Daily Value
Calories	112 kcal	
Carbohydrates	0 g	0% DV

Name	Amount	% Daily Value
Fiber	0 g	0% DV
Sugars	0 g	
Fat	12.75 g	16.3% DV
Saturated Fat	7.93 g	39.7% DV
Protein	0.04 g	0.1% DV
Cholesterol	32.80 mg	10.9% DV
Sodium	0.26 mg	0% DV

9. Milk

There are many different milk varieties, from regular cow to goat milk and reduced-fat options.

Each of these milk options has a vastly differing taste and nutritional profile, so the best option depends on the individual's wants.

Basic nutritional properties of whole milk for a 244-gram cup serving:

Name	Amount	% Daily Value
Calories	149 kcal	
Carbohydrates	11.7 g	4.3% DV
Fiber	0 g	0% DV
Sugars	12.3 g	
Fat	7.93 g	10.2% DV
Saturated Fat	4.54 g	22.7% DV
Protein	7.69 g	15.4% DV

Name	Amount	% Daily Value
Cholesterol	24.4 mg	8.1% DV
Sodium	105 mg	4.6% DV

10. Kefir

Kefir is a healthy fermented dairy food that originated in Russia and provides large amounts of beneficial bacteria. To make kefir, starter “grains” are combined with milk and left in a warm place to ferment. These “grains” are not the same type of grains as wheat, barley and oats; it is just a name given to describe the bacterial cultures.

During the fermentation process, lactic acid breaks down the lactose in milk. After fermentation, the texture of kefir resembles sour cream; it is thick and quite sour.

Various studies show that the bacteria in kefir might provide some health benefits, particularly concerning our gut health. For example,

studies show that it may modulate the immune system and cells and have anti-inflammatory properties.

Per 100 grams, a 243-gram cup of low-fat kefir provides the following nutritional values

Name	Amount	% Daily Value
Calories	104 kcal	
Carbohydrates	11.6 g	4.2% DV
Fiber	0 g	
Sugars	11.2 g	
Fat	2.48 g	3.2% DV
Saturated Fat	1.6 g	8.0% DV
Protein	9.21 g	18.4% DV
Cholesterol	12.2 mg	4.1% DV
Sodium	97.2 mg	4.2% DV

11. Protein Puddings

Protein puddings are high-protein dairy products typically made from skimmed milk, milk protein, thickeners, flavorings, and sweeteners. The net result is a dairy food that provides high amounts of dietary protein for relatively few calories.

The products come in various flavours, such as chocolate and vanilla, and are aimed at busy people and gym-goers for an on-the-go protein-rich snack. They tend to come in single-serve



containers.

Using data from Nutrition, a typical protein pudding provides the following nutritional values

Name	Amount	% Daily Value
Calories	106 kcal	
Carbohydrates	1.6 g	0.6% DV
Fiber	0.8 g	2.9% DV
Sugars	0 g	
Fat	2.4 g	3.1% DV
Saturated Fat	0.3 g	1.5% DV
Protein	20.0 g	40% DV
Cholesterol	4 mg	1.3% DV
Sodium	43 mg	1.9% DV

12. Whey Protein

Whey is a by-product of the cheese-making process, made from the leftover liquid. Significantly, whey protein has an incredibly high protein density. The total amount of protein tends to fall between 70% and 90% by weight, depending on the product.

Whey provides a convenient way to get protein on the go, at the gym, or after exercise. As a processed food, pure whey protein is a relatively healthy product that provides a range of highly bioavailable amino acids.

Nutrition profile of a standard whey protein per 100 grams

Name	Amount	% Daily Value
Calories	352 kcal	
Carbohydrates	6.25 g	2.3% DV
Fiber	3.1 g	11.1% DV
Sugars	0 g	
Fat	1.56 g	2.0% DV
Saturated Fat	0.78 g	3.9% DV
Protein	78.1 g	156.2% DV
Cholesterol	16.0 mg	5.3% DV
Sodium	156 mg	6.8% DV

Table 12: Nutrition facts for whey protein per 100 grams

13. Whipped Cream (Aerosol)

Unlike regular cream, whipped cream in an aerosol can contains a blend of various ingredients.

These ingredients typically include sugar and emulsifiers. However, cream is still the primary ingredient and represents about 95% of the product. Whipped cream is typically used as a dessert topping or for topping milkshakes and milky coffee drinks.

Nutrition facts for whipped cream from an aerosol can per ounce (28.35g) serving

Name	Amount	% Daily Value
Calories	73 kcal	
Carbohydrates	3.54 g	1.3% DV
Fiber	0 g	0% DV
Sugars	2.27 g	
Fat	6.30 g	8.1% DV
Saturated Fat	3.92 g	19.6% DV
Protein	0.91 g	1.9% DV
Cholesterol	21.55 mg	7.2% DV
Sodium	2.27 mg	0.1% DV

14. Yogurt

Yogurt is one of the most popular foods in the world. Producers add bacterial cultures known as “yogurt cultures” (*Lactobacillus* and *Streptococcus*) to milk. The temperature is kept warm for a few hours, and then the yogurt is allowed to cool. After this, the yogurt needs to remain warm to ferment; the more extended the fermentation period, the sourer the yogurt will be. Yogurt has been the focus of a wide variety of studies and is thought to have several potential health benefits.

Yoghurt, whole milk, Nutritive value per 100 g		
Principle	Nutrient Value	Percent of RDA
Energy	61 Kcal	3%
Carbohydrates	4.66 g	3.5%
Protein	3.47 g	6%
Total Fat	3.25 g	16%
Cholesterol	0 mg	0%
Dietary Fiber	0 g	0%
Vitamins		
Folates	7 µg	2%
Niacin	0.075 mg	<10%
Pyridoxine	0.032 mg	2.5%
Riboflavin	0.142 mg	11%
Thiamin	0.029 mg	2.5%
Vitamin A	99 IU	3%
Vitamin C	0.5 mg	<1%
Vitamin E	0.06 mg	<1%
Vitamin K	0.2 µg	<1%
Electrolytes		
Sodium	46 mg	3%
Potassium	155 mg	3%
Minerals		
Calcium	121 mg	12%
Copper	0.009 mg	1%
Iron	0.05 mg	<1%
Magnesium	12 mg	3%
Manganese	0.004 mg	<1%
Zinc	0.59 mg	5%

Also, it is worth noting that Greek yogurt is a little different from regular yogurt. This dairy product has a thicker and creamier texture and contains more protein and less lactose than regular yogurt.

Benefits of value added Dairy Products

The main benefit of most dairy products is their significant and diverse nutrient content.

Aside from pure fat sources (such as butter), milk-based dairy foods contain high levels of protein, lactose, calcium, and phosphorus. They also supply numerous key vitamins and minerals, including vitamin B12. These nutrients are very useful in the overall body's functions.

Health risks of Dairy value added Products

There are potential health risks associated with consumption of dairy products depending on the context of intake and the individual. The following are some health risks for consumers:

- **Lactose intolerance and milk allergies:** dairy products may be unsuitable for individuals with

lactose intolerance or a cow milk allergy.

- **Sodium content:** Some dairy products, such as hard-aged cheese, can contain a significant amount of sodium. It is worth noting that sodium is an essential mineral, so this is not necessarily a “bad” thing. However, depending on the overall diet, high intakes of cheese may push someone over the recommended daily value for sodium, which is 2300 mg daily. In addition, high sodium intake levels can lead to increased blood pressure.
- **Saturated fat:** Some dairy foods, such as butter and ghee, contain high levels of saturated fatty acids which are injurious to consumers. The Dietary Guidelines for Americans recommend limiting saturated fat intake to 10% of total energy, which would be around 22 grams for a 2000-calorie diet. Diets characterized by a high saturated fat content can increase low-density lipoprotein cholesterol (LDL-C) and apolipoprotein B (Apo-B) levels. LDL-C and Apo-B are associated with an increased risk of cardiovascular disease.



Compiled by: Macharia E.W., Adongo. A. O., Kanegeni N.N.
and Mathai N.M

Edited by: Nyabundi K.W., Mukundi K.T., Omondi, S.P.,
Maina P., Wanyama H.N and Mugata R.K.

Design and Layout: Nogrecia Mnene

For more information contact; The Centre Director,
KALRO OI joro orok
Phone: 0710854357

Email: kalrooljk@kalro.org , kalrooljk@gmail.com

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