



Milk

Factsheet

Introduction

Milk is a staple food of the British diet and is packed with nutrients which benefit us at every stage of our lives. It plays a key role within a healthy balanced diet.

This factsheet provides you with information about milk including how our milk is made, milk and a sustainable diet, types of milk available, the nutrients contained in milk and its beneficial role in health during our lifetimes.

It also dispels some of the common myths and misconceptions about milk.



How milk is made

The first key players in milk production are, of course, the cows. They are milked twice a day and the average UK dairy farm produces 3,000 litres of milk daily! The milk is then stored in tanks at 4°C and is transported to the dairy for processing.

Here, the milk is:

1.

Pasteurised: the milk is heated up very quickly and cooled down again. This process ensures that harmful bacteria are reduced in number so that they do not constitute a health risk.

2.

Separated: the milk is separated into its cream component (rich in fat) and liquid component.

3.

Standardised: the cream and liquid component are re-blended so that the milk contains the exact amount of fat required depending on whether it is to be consumed as whole, semi-skimmed or skimmed. Lower-fat options tend to have less vitamin A and vitamin E than whole milk, but have more minerals such as calcium, potassium and phosphorus.

4.

Homogenised: milk contains fat globules of different sizes. This means that, if left to set, the larger globules would make their way to the top and form a cream layer. Homogenisation is a process where the milk is pushed through a hole with such pressure that the larger fat globules are broken down and dispersed within the milk. This gives milk an even, more palatable consistency.

Fast facts on milk

- The average UK dairy farm produces 3,000 litres of milk a day
- 88% of those aged 16 and over reported using cow's milk in their household in the last three months. Semi-skimmed milk remains the most popular.
- Milk is mainly consumed in beverages such as tea and coffee and with breakfast cereals
- A glass of milk is a source of protein, calcium, potassium, phosphorus, iodine, vitamin B2, B1 and B12
- Milk contributes 21% of calcium intake in the diets of UK adults
- For our body to get the same amount of calcium as that obtained from a glass of milk, we would have to eat 63 brussel sprouts, 11 servings of spinach, 4 servings of broccoli

Varieties of milk



Pasteurised milks

- Whole milk: milk with a minimum fat content of 3.5 grams of fat per 100 g of product
- Semi-skimmed milk: milk with a fat content between 1.5 and 1.8 grams per 100 g of product
- Skimmed milk: milk with a fat content which does not exceed 0.3 grams per 100 g of product
- 1% milk: milk with a fat content of 1g per 100 g of product
- UHT milk: milk which has been heated at such high temperatures that all potentially harmful bacteria are killed. This particular heat-treatment produces longer shelf-life milk compared to conventional milk
- Filtered milk: milk which undergoes a filtration process (in addition to the usual steps of milk processing) to remove further souring bacteria, therefore the shelf-life is increased
- Flavoured milk: milk which has been sweetened and flavoured (e.g. chocolate and strawberry milk). Many flavoured milks are made from low-fat varieties (semi-skimmed or 1%). As a result of being sweetened they have a higher sugar content but still provide a vast array of beneficial nutrients and are a source of calcium, potassium, vitamin B2 and phosphorus

Raw milk

Raw milk is milk that has not been heat-treated. The nutritional value of raw milk is not significantly different to pasteurised or heat-treated milk but it may contain pathogens which could be harmful to health. Sales of raw milk are banned in Scotland and limited in England, Wales and Northern Ireland due to their links with food poisoning.

The **nutrients** in milk

Milk is a nutrient-rich food as it provides a high number and density of nutrients per amount of calories.

A 200 ml glass of semi-skimmed milk is:

High in protein 31% energy value of food	Contributes to the maintenance of, and a growth in muscle mass Needed for normal growth of bone in children
High in calcium 31% recommended intake	Important for normal muscle function Required for maintaining bones and teeth Needed for normal bone development in children
A source of phosphorus 28% recommended intake	Helps maintain normal bones and teeth Contributes to normal energy yielding metabolism
A source of potassium 16% recommended intake	Contributes to normal muscle and nerve function Helps maintain normal blood pressure
High in iodine 41% recommended intake	Helps maintain skin Contributes to the normal growth of children
High in vitamin B2 (riboflavin) 36% recommended intake	Helps maintain normal skin, vision and nerve functioning Contributes to the reduction of tiredness and fatigue
A source of vitamin B5 (pantothenic acid) 23% recommended intake	Contributes to normal mental performance Helps reduce of tiredness and fatigue
High in vitamin B12 72% recommended intake	Helps normal psychological and nerve function Contributes to normal functioning of the immune system

Recommended intakes are based on guidelines set for nutrition labelling in the European Union.



Milk and dairy throughout the life stages

Milk provides many nutrients which play an important role within the body throughout the different stages of life. Around the world, health professionals recommend milk and dairy foods as a significant part of a healthy balanced diet.

Infants and young children

Children grow rapidly during the first 5 years of life and have high energy needs. Since this age group only have small stomachs they need nutrient-dense foods to sustain them during growth. Professionals recommend that infants are exclusively breastfed up to the age of 6 months. After this, solid foods can be introduced gradually into their diet.

Healthcare professionals recommend that children under the age of 2 years consume whole milk and full-fat dairy products to help them meet their requirements for fat soluble vitamins and to aid growth. Therefore, children are encouraged to consume whole milk as a main drink from the age of 1 year up to the age of 5 years. Children who are eating and growing well can have semi-skimmed milk from the age of 2 years onwards. Skimmed or 1% fat milk are not suitable for children below the age of 5.

Recommended daily portion sizes of milk and dairy foods to meet calcium needs:

- ½ glass of whole milk (from the age of 12 months onwards) +
- A 100g pot of plain full-fat yogurt (from the age of 6 months onwards) +
- A few small cubes (15g) of hard cheese (from the age of 6 months onwards).

Primary school age children

In this age group, milk continues to provide essential nutrients for growth and development, as well as helping to protect teeth against dental caries. Children of this age group can be impressionable so it is important for them to learn about eating well, including eating the right types of foods and physical activity.

Recommended daily portion sizes for milk and dairy foods to meet calcium needs:

- ¾ glass of semi-skimmed milk +
- A 150g pot of low-fat yogurt +
- A few small cubes (20g) of hard cheese (from the age of 6 months onwards).

Children should be offered milk at school to help them meet their calcium needs.

In children aged 7-10 years, a carton of milk provides:

- 42% of their recommended calcium intake
- 53% of their recommended iodine intake
- 47% of their recommended B12 intake.

Teenagers

During the teenage years calcium demands are higher than in any other stage of life. Bones develop quickly, as they grow in length and density. During these years it is important to consume foods rich in calcium whilst the body completes the growth of its bones. Around 80% of the skeleton has formed by the age of 18 years. Having a good diet in teenage years promotes healthy bones for later in adult life. However, data shows that many teenagers fall short of the recommended calcium intake.

Recommended daily portion sizes for milk and dairy foods to meet calcium needs for teenage girls:

- 1 glass semi-skimmed milk +
- A 200g pot of plain low-fat yogurt +
- A piece of hard cheese that's about the length and width of two female thumbs

Teenage boys need bigger portions (or an extra portion) to meet their daily calcium needs:

- ½ pint of semi-skimmed milk +
- A 200g pot of plain low-fat yogurt +
- A piece of hard cheese that's about the length and width of two male thumbs

The National Diet and Nutrition Survey shows that, amongst young people aged 11-18 years, milk contributes to:

- 21% of their calcium intake – this is of particular importance as the latest nutritional data in the UK shows that 15% of this age group does not meet their recommended calcium intake
- 31% of their iodine intake – 21% of this age group do not meet their recommended iodine intake
- 4% of their calorie intake



Adults, particularly women

During pregnancy and breastfeeding it is particularly important for women to consume enough calcium to meet their own nutritional demands and that of their developing baby. Although there is no need to increase consumption of calcium during pregnancy, demands are higher during breastfeeding (an additional 550mg of calcium per day is needed).

Bones are still developing up to the mid-thirties. After this we begin to lose bone minerals and therefore it is essential to maintain calcium intake. Women over the age of 50 are particularly at risk of developing bone diseases. During the menopause women can lose bone stores of calcium which can be a risk factor for thinning bones and fractures.

Recommended portion sizes for male and female adults for milk and dairy foods to meet calcium needs are:

- 1 glass of semi-skimmed milk +
- A 150g pot of plain low-fat yogurt +
- A piece of hard cheese that's about the length and width of two thumbs

Older people (65 years and over)

Some older people may be at risk of losing their teeth or swallowing problems, muscle or bone diseases and malnutrition as a result of illness, prolonged hospitalisation or mobility issues. Milk and other dairy foods can be very useful for adding nutritional value to the diets of older people due to their nutrient density, flavour and palatability. Cream, butter and soft cheese can also be used to add nutrients and calories to puréed foods.

Recommended portion sizes for male and female adults over 65 years for milk and dairy foods to meet calcium needs are:

- 1 glass of semi-skimmed milk
- A 150g pot of plain low-fat yogurt
- A piece of hard cheese that's about the length and width of two thumbs



Lactose intolerance and cow's milk protein allergy

Research shows that the rate of cow's milk allergy and lactose intolerance in the UK population is much lower than often perceived by the public. If you think you have cow's milk allergy or lactose intolerance, you should visit your GP. If you are diagnosed with cow's milk allergy or lactose intolerance, a GP can refer you to a dietitian who will help you to manage your diet. Cutting out food groups without the advice of a dietitian is not recommended as it could have an adverse effect on your nutrient intakes.

Lactose Intolerance

Lactose intolerance is a condition where someone has a reduced ability to digest the sugar found in milk and dairy foods (lactose) due to a deficiency of lactase, an enzyme which breaks down lactose. Most people who have this condition can tolerate small amounts of lactose so there is no need to avoid dairy completely. Some dairy foods, such as cheese and yogurt, contain only small amounts of lactose.

Cow's milk protein allergy

Cow's milk protein allergy is very different to lactose intolerance. It is a response of the immune system to the protein contained in cow's milk. This type of allergy is not common but is more prevalent in young children. However, children usually grow out of the condition and can enjoy dairy foods as adults. Consult a registered dietitian for advice.



Myth busters

Milk consumption causes...

Acne?

There is no convincing evidence to show that milk and/or dairy foods cause acne. Acne is a condition which usually presents during puberty and is believed to be induced by hormones. As the body reaches puberty, testosterone is produced. This may increase the amount of oil in the skin. If there is too much oil, skin pores can become blocked and become infected with bacteria. This causes spots, blackheads or blister-like lesions.

Mucus?

Milk tends to leave a slightly filmy coating in the mouth or throat which can be mistaken for mucus. Mucus is a fluid secreted by the mucous membranes and is not produced as a result of drinking milk.

Eczema?

Eczema is an inflammatory response of the skin and is thought to be caused by a number of factors. It can be caused by substances which cause allergy and it has been related to asthma. It is essential, if you believe that food is causing this, to be tested for food allergies. It is not recommended to cut out food groups unless it is essential, as you may miss out on important nutrients from your diet.

Asthma?

Asthma is a condition which affects the respiratory system. There can be a family history of asthma or it can be triggered by environmental factors (for example, by allergens such as dust). Evidence does not support the idea that milk causes asthma. However, if you have been diagnosed with a food allergy such as cow's milk protein allergy, you may have asthma-like symptoms. It is important to be tested for allergies before ruling out food groups from your diet.



Milk as part of a sustainable diet

A sustainable diet has been described as one that provides all the nutrients needed for a healthy life and has a low impact on the environment and its resources (including water, plants and animals).

All food production has an impact on the environment and this may occur through increase in greenhouse gas emissions (gases which trap heat from the sun, causing a warming effect), excessive use of water and an adverse impact on the planet's resources.

A recent report calculated that the dairy industry is responsible for less than 3% of greenhouse gas emissions around the world (to put that into context, transport accounts for about 25% in the UK).

The dairy industry is working hard within the supply chain and in partnership with the government to decrease environmental impacts.

The achieved outcomes so far include:

Dairy Farmers

- 73% actively plan optimal nutrient management, so that the nutrients put into the soil match requirements for optimal plant growth
- 78% are implementing measures to use water more efficiently
- 29% have implemented some form of renewable energy
- 78% are implementing strategies to reduce agricultural emissions

Dairy Processors

- All of the 5 major processing companies are implementing a programme to manage emissions
- The processors have achieved a 15% reduction in water consumption
- The dairy industry has implemented a biodiversity strategy for processors
- There has been a 15.8% improvement in energy efficiency since 2008 in the dairy industry



Eating a healthy, balanced diet and reducing food waste are the most efficient ways for consumers to engage in a sustainable diet.

It is estimated that 7 million tonnes of food and drinks are wasted within UK households. Stopping food wastage would produce the equivalent environmental benefit as taking 1 in 4 cars off the road. The Love Food Hate Waste campaign developed by WRAP (Waste & Resources Action Programme) includes a website with all the facts and tips associating with cutting food waste.

For more information visit: www.lovefoodhatewaste.com

Milk Q&A

What are the nutritional differences between raw and pasteurised milk?

Studies have not found significant nutritional differences between raw and pasteurised milk, or different effects on health (for example, on the developments of cow's milk protein allergy). Raw milk is not as safe as pasteurised milk as it has not undergone heat treatment, a process which removes potentially dangerous organisms.

Is milk fattening?

There is a general misconception that dairy foods (including milk) are 'fattening' and that they lead to weight gain. This hypothesis is not supported by scientific evidence. In fact, a number of studies have found that there may be a potentially beneficial role of consuming dairy as part of a healthy balanced diet in weight loss.

Summary

- Fresh plain milk is a natural product with nothing added. It undergoes heat treatment to remove any harmful bacteria
- Dairy farmers and processors have achieved a number of milestones to produce more environmentally friendly sustainable products

Are hormones or antibiotics added to cow's milk?

In the UK hormones are not added to milk or to the diet of dairy cows to enhance their milk production. Natural hormones can be found in a wide range of foods and are present in both plant and animal based foods that we consume.

Milk is rigorously tested for traces of antibiotics under European law to ensure that food is safe for consumption. Cows receiving antibiotics are milked separately from the rest of the herd to ensure that the milk is discarded and does not enter the food supply.

What are the nutritional differences between organic and conventional milk?

There are no significant differences between organic milk and conventional milk in terms of quality, safety

and nutrition. Consumers, however, may choose to purchase organic milk for reasons of personal preference. The general principles of organic food production involve avoiding pesticides and fertilizers, using crop rotation to maintain soil fertility and using only a limited number of approved products and substances where necessary in the processing of organic food.

Does consuming milk cause heart disease?

Saturated fats have been associated with increased risk of developing heart disease. Milk and dairy foods make a contribution to saturated fat intake in the UK diet. Recent health research has suggested that the issues concerning saturated fat are more complex than the simple message of 'saturated fats are bad'. In fact, the evidence actually suggests a protective effect of milk consumption on risk of developing heart disease. This may also be due to other beneficial nutrients contained in milk (e.g. calcium).

- There are several varieties of milk including; whole, semi-skimmed and skimmed milk
- Milk isn't just good for children, the nutrients in milk are useful for all ages across the life stages
- Lactose intolerance and cow's milk allergy are two completely different conditions that require different management
- Conditions such as acne, mucus, eczema and asthma are not caused by consuming milk or dairy products
- Milk is a nutrient-rich product that is a source of several vitamins and minerals (calcium, potassium, phosphorus, iodine, B1, B2 and B12) and protein



Bibliography

1. This is Dairy Farming. From Farm to Fridge
<http://www.thisisdairyfarming.com/discover/dairy-produce/from-farm-to-fridge/>
[Date Accessed: 11/2016]
2. Department for Health (2016). National Diet and Nutrition Survey. UK Results from Years 5 and 6 (combined) of the Rolling Programme (2012/13 – 2013/14).
[Date Accessed: 11/2016]
3. Food and Agriculture Organisation (2013). Milk and dairy products in human nutrition.
<http://www.fao.org/docrep/018/i3396e/i3396e.pdf>
[Date Accessed: 09/2016]
4. Food Standards Agency: Food Labelling Regulations 1996
<http://www.food.gov.uk/sites/default/files/multimedia/pdfs/Fguidnot1.pdf>
[Date Accessed: 09/2016]
5. Claeys et al (2013). Raw or heated cow milk consumption: Review of risks and benefits.
Food Control 31(1): 251-262.
6. Dairy RoadMap: What is the dairy roadmap?
<http://www.dairyroadmap.com/what-is-the-dairy-roadmap/>
[Date Accessed: 09/2016]
7. Love Food Hate Waste: About Food Waste
<http://england.lovefoodhatewaste.com/content/about-food-waste-1>
[Date Accessed: 09/2016]
8. EU Register of nutrition and health claims made on foods
<http://ec.europa.eu/nuhclaims/?event=search&CFID=1223583&CFTOKEN=7e681cd2713a4352-B2781842-958E-AEC5-7C0C51657AFF411&jsessionid=931226daf9c26759f0bb1158713b1d5b50d5TR>
[Date Accessed: 09/2016]
9. Finglas et al (2015). McCance & Widdowson's The Composition of Foods, Seventh summary edition.
Cambridge: Royal Society of Chemistry.
10. Department for Health (1991). Dietary Reference Values for Food Energy and Nutrients for the United Kingdom: Report of the Panel on Dietary Reference Values of The Committee on Medical Aspects of Food Policy. London: HMSO (41)
11. NHS choices: Milk and Dairy Foods
<http://www.nhs.uk/Livewell/Goodfood/Pages/milk-dairy-foods.aspx> [Date Accessed: 09/2016]
12. NHS choices: Lactose intolerance
<http://www.nhs.uk/Conditions/lactose-intolerance/Pages/Introduction.aspx> [Date Accessed: 09/2016]
13. BDA: Milk Allergy Factsheet
<https://www.bda.uk.com/foodfacts/milkallergy> [Date Accessed: 09/2016]
14. European Commission: Health and Consumers.
Food http://ec.europa.eu/food/food/chemicalsafety/contaminants/hormones/index_en.htm
[Date Accessed: 09/2016]

For details on additional information sources please contact The Dairy Council.