

THE PASTEURISATION OF DAIRY PRODUCTS

Milk and dairy products have long been a significant source of human nutrition and pasteurisation has done much to ensure their safety as comestibles, but could returning to raw milk products be a good thing? Rebecca Cullen investigates.

A Milk produced by animals such as cows and goats, and its by-products, have been consumed by humans since the advent of organised farming around 7,500 years ago. The ability to drink milk past childhood without getting sick was dependent on a genetic change that allowed the people of Europe to include milk as a staple of their diet. This genetic characteristic, known as lactase persistence, most likely developed in Central Europe and the Balkans and spread to the rest of Europe over a period of a thousand years. The genetic mutation allowing for milk consumption is most prevalent today in the populations of Ireland and Sweden.

B It is still not fully understood why European peoples developed a tolerance for lactose past childhood but there are indications that drinking milk, which is rich in vitamin D, helped to compensate for the lack of sunlight in European countries. Another theory is that milk could provide nutrients such as protein and vitamins all year round regardless of whether crop yields were good in any particular area. So the ability to drink milk was an evolutionary progression that helped ensure survival in harsh climates.

C But even though dairy products are rich in nutrients, they have long been linked to ill health and disease. The problems arise because milk can easily become contaminated with bacteria even in clean dairies and cows, in particular, can pass on diseases to humans through milk. Before the era of pasteurisation, milk was responsible for causing many deaths through food poisoning as a result of contaminated milk, and was responsible for spreading serious infectious disease such as tuberculosis, brucellosis and diphtheria. Many of these diseases were only finally controlled once pasteurisation became the norm.

D Louis Pasteur made the discovery that ensured the world could drink milk products safely by accident. He had been commissioned by the Emperor Napoleon in the mid 19th century to find out why drinks such as wine and beer sometimes soured during the fermentation process. On discovering the organisms that were creating the problem he decided to perform a series of tests involving the rapid heating and cooling of liquids to see if this process would neutralise the microorganisms that were ruining the French wine industry. The process was soon being used to make milk safe and the results were so good that not only were millions of lives saved but it allowed for the rapid expansion of the dairy industry world-wide.

E Without pasteurisation it would be impossible to have a large mass market dairy industry. Even the cleanest factory farms with the most high-tec modern equipment cannot ensure that milk is free of contamination without pasteurisation. The ability to pasteurise and cool milk for transportation means that milk not only has a standardised quality, it can also be safely delivered across wide areas, even from one country to another without compromising safety standards. Another benefit is that cheeses can be produced for a mass market that will have a guaranteed quality and type of flavour. This is why all cheddar cheeses taste the same, more or less.

F But some cheeses have always been unpasteurised. Parmesan cannot be called Parmesan unless it is unpasteurised. The list of traditional unpasteurised cheese is long and many more producers are turning to using raw milk in cheese-making due to the supposed superior taste qualities natural microflora can bring to the cheese making process. While there are many producers who dispute that

only cheeses made with raw milk will be of the highest quality, most producers agree that using raw milk is a legitimate and safe way to produce cheese.

G But what about drinking raw unpasteurised milk? In England the law allows people to buy raw unpasteurised milk directly from the producer on the day it is produced. The government has in fact tried to ban the sale of raw milk to retail consumers but has always been met with consumer opposition. While it is true that the absolute safety of raw milk cannot be guaranteed, its proponents point out that illness from raw milk consumption is much lower than from other forms of contaminated food, including salmonella from the sale of raw chickens.

H Those in favour of raw milk often claim that it bestows a number of health benefits that cannot be gained from drinking pasteurised milk but, to date, there is no firm evidence that raw milk helps prevent diseases of the colon, such as IBS, or respiratory conditions such as asthma. There is however good evidence that raw milk does taste better with a creamier flavour than pasteurised milk. The dairy industry in England supports raw milk being available from accredited dairy farms but it does not support it being sold commercially in shops to a mass market due to the difficulty in quality control of high volumes of milk products. So raw milk is always going to have limited availability and with good reason.

Questions 1-8 Complete the summary below. Choose **ONLY ONE WORD** from the text for each answer.

Research Results

The genetic mutation known as lactase 1 _____ is what allows milk consumption past childhood in humans. Despite a long history of milk consumption in human's milk has always been associated with ill 2 _____ through bacteria-contaminated milk and the spread of infectious disease. Pasteur discovered a process involving the heating of liquids to neutralise 3 _____ that caused wine to sour during fermentation. These problems were finally brought under control through the process of pasteurisation discovered in the mid 19th century and which also allowed for the quick 4 _____ of the dairy industry on a global scale. The standardisation of production ensures warranted 5 _____ and a specific type of flavour in mass produced cheeses. However, raw milk has always been used in the production of some 6 _____ due to its association with good flavour. Also, although many in the dairy industry do not think raw milk should be available to the 7 _____ selling, few see any reason to ban it outright. Despite claims to the contrary no evidence has been found that raw milk can 8 _____ illnesses that affect lungs or other parts of the body.