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ScienceDirect
Appetite 51 (2008) 25–29
Appetite
www.elsevier.com/locate/appet

Research report

Food fears and raw-milk cheese

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Received 10 December 2007; received in revised form 13 January 2008

Abstract

This paper examines the debate over the safety of raw-milk cheese. Departing from Nestle's categories of ''science-based'' and ''value-based'' approaches to risk assessment, the author argues that raw-milk cheese advocates, as well as proponents of pasteurisation, invoke science to support their positions, and measure risk against potential costs and benefits. Additionally, the author argues, each position is animated by, albeit differing, values and their attendant fears. While artisan cheesemakers associations have successfully averted bans on raw-milk cheesemaking in various contexts in recent years, the author concludes that they remain vulnerable to future food scares unless consumer interest in raw-milk cheese is sustained.

Keywords: Raw-milk cheese; Food scares; Pasteurisation; Food safety

In the wake of food scares in recent decades, raw-milk cheeses have often been categorised as ''risky'' food substances. While raw-milk cheeses have been associated with tuberculosis, *E. coli*, *Salmonella*, *Brucella melitensis*, *Staphylococcus aureus*, and campylobacteriosis, the greatest concerns have focused on *Listeria monocytogenes*. Only since the early 1980s has human susceptibility to *Listeria* been recognised (Gorman, 2002). Listeriosis in humans is typically characterised by flu-like symptoms, including headache, fever, abdominal pain, vomiting and diarrhoea. Effects may be worse among children, the elderly, and people with compromised immune systems who often develop pneumonia, meningitis or encephalitis. Pregnant women and their foetuses are particularly vulnerable (Stuttaford, 1995). The combined mortality rate for victims of listeriosis is an alarming 30%. Largely as a consequence of scares associating *Listeria* with raw-milk cheese, the young, the aged, people with compromised immune systems, and especially pregnant women are frequently advised to forego raw-milk products.

Advocates of raw-milk cheese offer an alternative perspective. David Grotenstein has asserted: ''We know for a fact that the streets of Europe would be littered with bodies and [European] hospitals would be filled to capacity if there were a problem with unpasteurised products'' (Soref, 2000). Indeed, defendants of raw-milk cheese have suggested that pasteurised cheese presents its own perils. In layman's terms, according to Patrick Rance: ''[Pasteurising milk] doesn't kill all the listeria bacteria. Some of them are merely stunned. And because other kinds of bacteria have been killed, the listeria bugs have a free run to breed'' (Jeffrey, 1992). Fear, it would seem, works on both sides of the debate. According to Nestle:

> Safety is relative; it is not an inherent biological characteristic of food. A food may be safe for some people but not others, safe at one level of intake, but not another, or safe at one point in time but not later. Instead, we can define a safe food as one that does not exceed an *acceptable* level of risk. Decisions about acceptability involve perceptions, opinions, and values, as well as science. When such decisions have implications for commercial or other self-interested motives, food safety enters the realm of politics (Nestle, 2003: p. 16).

Nestle further suggests that perceptions of food safety and risk are defined by two divergent ''cultures'', one ''science-based'' and the other ''value-based'' (pp. 16–22). She suggests that the scientific approach emphasises observation and empirical evidence and seeks to measure risk against potential costs and benefits. By contrast, the value-based approach contextualises risk within psychological, cultural and social contexts and balances risk against such difficult to measure entities as ''dread'' and ''outrage.'' According to Nestle, a

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doi:10.1016/j.appet.2008.02.004

division of labour may emerge between these two approaches. She quotes Edward Groth, who writes: ''What risks are involved? How big are they? Who is at risk? These are scientific questions. The central value question is: Given those facts, what should society do?'' But Nestle subtly challenges this tidy divide between science- and value-based approaches. ''The two approaches greatly overlap,'' she warns. ''Science-based approaches are not free of values, and value-based approaches also consider science'' (p. 17).

Taking Nestle as a point of departure, I challenge the simplistic divide by which protagonists in the debate over raw-milk cheese safety have often been characterised or, in fact, characterised themselves. According to this divide, raw-milk cheese enthusiasts fall into the ''value-based'' category, while proponents of pasteurisation fall into the ''science-based'' category. Closer scrutiny reveals a more complex picture.

Science-based perceptions of cheese safety and risk

Following food scares in the 1970s, 1980s and 1990s, a ban on raw-milk cheese was considered not only by the US Food and Drug Administration (FDA) (Wakin, 2000), but also by various European countries and, subsequently, the European Union (EU). In 1998, the London-based Institute of Food Science and Technology asserted:

> ''It is indisputable that some outbreaks of food-borne illness have been clearly linked with the consumption of cheese, the majority of those reported being associated with cheese made from unpasteurised or improperly pasteurised milk. Whilst pathogens can and do gain access to cheese after curd formation, it is clear that many food-borne pathogens are faecal in origin. . ., it not being possible to milk cows aseptically. . .. In addition to potential faecal contamination, pathogens may be excreted into the milk directly from the udder. . .. Correctly-controlled milk pasteurisation kills such bacteria. . .. Pasteurisation. . .. provides the simplest means of ensuring the destruction of vegetative pathogens in raw milk'' (IFST, 1998).

Despite occasional rhetorical flourishes – (the FDA has equated eating raw-milk cheese with playing Russian roulette, Newman, 2004) – consideration of a ban on raw-milk cheese has almost invariably been expressed in the language of science. In 2000, an FDA spokesperson told journalist Anna Soref, ''We are always looking at the scientific evidence [regarding raw milk], and if that changes, so may our stance'' (Soref, 2000). FDA safety analyst Dr. John C. Mowbray told a reporter that same year: ''We're reviewing our policy which requires 60-day aging for raw-milk cheese, to determine whether it's sufficient to protect public health. We have some indications in the scientific literature that show that certain pathogens that are likely to be in raw milk would survive that aging process. Our allowance for aging as a substitute for pasteurisation is based out of (*sic*) the creation of our cheese standards, which was over 50 years ago. Our understanding of microbiology has progressed quite a bit since then'' (Wakin, 2000). Even as Mowbray spoke, scientists at a federal lab were making cheeses from raw milk inoculated with bacteria to determine whether various pathogens could survive in aging cheese more than 60 days (Kummer, 2000; Wakin, 2000).

The pro-pasteurisation camp has not been alone, however, in deploying science in support of its perspectives. In the face of calls for a ban on raw-milk cheese in various places at various times, raw-milk advocates have also articulated their positions in the language of science. Cheese, they point out, is produced through the fermentation of milk, a process that has historically depended upon bacteria naturally found in raw milk. These bacteria, they argue, hold potential pathogens in check by ''out-competing'' them. This measure of control, they admit, depends upon hygienic practices in the dairy and in the cheese room. Good quality raw milk from healthy, well-fed animals not only contains fewer pathogens, but also contains proteins (lacto-ferrin) and enzymes (lysozyme and lactoperoxidase) that inhibit or eliminate pathogens (Donnelly, 2005). The craft of cheesemaking, they suggest, lies precisely in creating conditions favourable to the growth of ''good bacteria'' and the elimination of ''bad bacteria'' through controlling variables such as temperature, moisture, and acidity.

Raw-milk advocates directly challenge the science of pasteurisation proponents. In a review of the scientific literature, food scientist Donnelly (2005) has concluded: ''When outbreaks of human illness associated with consumption of raw-milk cheese are reviewed, it is clear that in the majority of instances factors other than the use of raw milk contributed to pathogens being present in cheese''. Gifford (1999–2003) has argued: ''In experiments cited by the FDA to examine whether pathogenic bacteria could survive beyond a 60-day refrigerated aging process, technologists 'inoculated' cheese milks and also made cheeses with 'toxic cocktails' of multiple strains of *E. coli* bacteria. It is not likely that these conditions would occur naturally''.

Raw-milk advocates have also invoked science to suggest that pasteurised cheese presents its own risks. The enzymes in raw milk not only aid in the digestion of sugars, fats and minerals in the milk, but also those in other foods. By destroying these enzymes, raw-milk enthusiasts assert, pasteurisation renders such nutrients more difficult to digest, contributing to osteoporosis and lactose intolerance. Pasteurisation, they argue, also destroys the naturally occurring cortisone-like factor in milk, meaning that whereas raw-milk products help control allergies, pasteurised milk products do not. Similarly, whereas raw-milk products contain beneficial bacteria that colonise the digestive tract and fortify the immune system, pasteurisation diminishes or eliminates these benefits (Cowan, 1999–2003; Schmid, 2003).

The destruction of indigenous bacteria, enzymes and proteins through pasteurisation has even more sinister effects, raw-milk advocates assert. ''Starter cultures'' used to make cheese with pasteurised milk must alone fight off pathogens to which the cheese is subsequently exposed (Donnelly, 2005; Style, 2006). A study by Rudolph and Scherer (2001) in fact shows ''a higher incidence of Listeria monocytogenes in cheese made from pasteurised milk (8 percent) than in cheese made from raw milk (4.8 percent)'' (in Donnelly, 2005).