Consumption of raw milk poses a realistic and unnecessary health threat

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A recent review by Belgian researchers from a variety of universities and organisations, published in the international peer-reviewed journal Food Control, examined the risks and benefits associated with the consumption of raw and heat treated cow's milk. The Review addressed microbiological, nutritional and health aspects. Raw milk is perceived to be associated with health benefits that are destroyed upon heating. However, the authors refute these perceptions and conclude that consumption of raw milk poses a realistic and unnecessary health threat from possible contamination with pathogenic microorganisms. Furthermore, they conclude that heat treatment does not alter the nutritional value of raw milk and it remains the most effective method to increase the microbiological safety of raw milk.

The risks associated with raw milk consumption are mainly of a microbiological nature. Pathogens most commonly associated with human outbreaks attributed to raw milk or raw milk products include *Salmonella* spp., *Campylobacter* spp., *Escherichia coli* O157:H7, *Yersinia enterocolitica, Listeria monocytogenes* and *Staphylococcus aureus*. Those most at risk of foodborne diseases are the very young, elderly persons, pregnant women and immune-compromised persons, although anyone can be affected. The most common symptoms include diarrhoea, vomiting, nausea, fever and abdominal cramps; however, more severe clinical symptoms including death can occur. The risk posed by raw milk consumption is considerably reduced and even eliminated by heat treatments, such as pasteurisation (e.g. 'high temperature short time' pasteurisation where the milk is maintained at a temperature of 71-74°C for 15-40 seconds), sterilisation (110-120°C for 10-20 minutes) and ultra-heat treatment (UHT) (135-140°C for 6-10 seconds). The impact of milk pasteurisation on the prevalence of human outbreaks is clearly evident. Before milk was heat treated by pasteurisation, 25% of all foodborne and waterborne diseases in the USA were associated with milk. Nowadays this number is below 1%.

The nutritional value of food not only depends on its nutrient content but also on the bioavailability of the nutrients and their contribution to the recommended daily intake. One of the main arguments of raw milk proponents is that heating reduces the nutritional value of milk; however, the authors of this

review refute this argument. They conclude that although heating modifies the functional properties of milk proteins (e.g. emulsifying and water binding properties) it has little effect on their digestibility and nutritional properties. The most relevant essential amino acid in milk is lysine and although the authors note that small losses are observed after heating, the differences between raw and heat treated milk for other amino acids are negligible. Commercial heat treatments also have little or no impact on lipids (seasonal and feed variations have a bigger impact on lipid content), vitamins, minerals or trace elements. The authors also note that besides the microbiological issues, raw milk is nutritionally insufficient for infants and toddlers.

Studies have also shown that milk allergies and lactose intolerance are independent of whether milk has been heat treated or not.

The authors accept that heating changes the organoleptic (sensory) properties of raw milk; however, they point out that processing techniques and packaging materials have been developed to minimise off-flavours. Taking all arguments into account, the organoleptic properties of raw milk do not offset all possible health risks, namely milk-borne diseases and an inappropriate nutritional composition for certain age groups.

For further information please see:

Claeys WL, Cardoen S, Daube G, *et al*. (2013). Raw or heated cow milk consumption: Review of risks and benefits. Food Control 31(1): 251-262.