

Gustatory richness and health quality assured by natural cheese microbiota

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Research scientists from INRA, Université de Caen and Université de Franche-Comté have reviewed the benefits of traditional, raw-milk cheeses. They showed that traditional cheeses have unrivalled advantages in terms of both their diversity and their gustatory richness, but also regarding their protection against pathogenic agents. These benefits are linked to the specific microbiota found in these cheeses;

they result from the use of raw milk, combined with the specific techniques used to manufacture traditional cheeses.

A rich microbiota for intense gustatory pleasure

Traditional cheeses contain a rich and highly specific [microbiota](#) because of the diversity of the traditional methods used in their manufacture. From the production of milk to the ripening of cheeses in different environments, a wide range of micro-organisms have an opportunity to develop. Indeed, [raw milk](#) already contains nearly 300 species of bacteria and 70 species of yeasts, which are subsequently found to differing degrees in the cheeses.

The microbiota of cheeses is the source of their different aromas and flavours. Micro-organisms native to raw milk, whose metabolic potentials differ from those of commercial strains, may enable the more intense and complex development of aromatic compounds.

Limited health risks

Producers of raw milk cheeses need to manage their associated health risks. The research team showed that the microbial combinations present in traditional cheeses were able to protect them - both in the paste and on the surface - from dangerous pathogens, notably *Listeria monocytogenes*. The surfaces of the wooden equipment used to manufacture and ripen certain raw milk cheeses also appeared to be protected by a complex microbial biofilm limiting contamination by redoubtable pathogens such as *Salmonella*, *Listeria monocytogenes*, *Escherichia coli* O157/H7 and *Staphylococcus aureus*.

Between traditional and industrial cheeses

Traditional raw milk cheeses have undeniable advantages, but the effects of their consumption on human health are still unknown. Nevertheless, studies performed on raw milk have demonstrated that its consumption can protect against allergies, asthma, hay fever and, more generally, atopic sensitisation.

Industrial manufacturers seek to diversify their products by adding selected strains to milk from which the native microflora have been removed. However, the industrial use of these strains is restricted by the regulations because of the problems inherent in proving their safety. At present it seems difficult to be able to reconstitute the breadth of diversity of traditional cheese microbiota and their environments, even though this would make a major contribution to the diversification sought by industrial cheese producers.

WHAT IS A "TRADITIONAL CHEESE"?

Raw milk AOP cheeses are currently the best traditional cheeses available. They have all the characteristics generally used to describe traditional food products: production in limited geographical areas, use of specific know-how and techniques handed down from generation to generation, and the use of milk that has undergone little or no treatment after milking. Raw milk AOP cheeses frequently come from mountainous areas, and are mainly produced in small processing units. The name "traditional cheese" can also extend to cheeses produced using milk whose native microbiota has been eliminated by different treatments applied to the milk if they are produced on a farm or in small units, if they are inoculated with a variety of acidifying yeasts, and if the microbiota that causes ripening is allowed to be expressed (30% of AOP [cheeses](#) in France).

More information: Montel Marie-Christine, Buchin Solange, Mallet Adrien, Delbes–Paus Céline, Vuitton Dominique A., Desmasures

Nathalie, Berthier Françoise. "Traditional cheeses: rich and diverse microbiota with associated benefits." Bibliographical review, *International Journal of Food Microbiology*, 2014, vol. 177, pp 136-154.

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