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Workshop n°1, Session n°2

Contribution of natural rennet-ferment or panchera to the biodiversity and safety of artisanal goat cheese, Argentina.

Goat cheese in Argentina is a foodstuff produced by family farmers in an artisanal way, and according to technologies inherited from their mother's side of the family. This production is characterised by the fact that it includes milk; each family has herds of 50-70 animals that are milked by hand on a daily basis, although production is seasonal (spring, summer, autumn). This milk is the basis for the production of cheese for consumption and sale. The traditional cheese-making technology is characterised by the use of raw milk, rennet/natural ferment (self-made) and salt as the only inputs added to the milk. Although cheese is considered a healthy food by processors and consumers, it was necessary to investigate the safety barriers that these technologies offered for regulatory purposes. In this sense, it was possible to recognise that cheeses made with natural rennet/ferment have a tendency to reach pH 5.3 (barrier to pathogen growth) between the 6th and 10th day of airing. Cheeses made with high-purity (commercial) chymosin, as a variant of the artisanal technology, require at least 10 days.

This observation focused, among other things, on the microbiology of cheeses made with commercial rennet/ferment vs. commercial rennet. Next, we studied a population of 34 artisanal goat cheeses (21 made with commercial rennet and 13 with natural rennet/ferment) from the Amblayo dairy basin (Salta). It was verified that cheeses with pH higher than 6 and up to 5 days of airing were made with commercial rennet; in these cheeses, lactobacillus counts (rogosa agar, 30°C, microaerophilic, 72 h) were 4.0-6.0 log cfu/g, being lower than those obtained in rennet/ferment cheeses. In the latter case, the pH was in the range 5.6-5.1 and the lactobacillus count was between 6.7-8.5 log cfu/g. Analogous behaviour was found in enterococci counts on MSS agar.

Natural rennet-ferment or 'panchera/pancho' (popular term) is made from the abomasum of the suckling kid or young animal, which is washed, dried, smoked and dehydrated in a closed place for a certain period of time, depending on the production area. In Amblayo in particular, rennet is used one year after production. It brings together microbiology and enzymes specific to the area, associated with the climate, pasture and water; it is placed in boiled cheese whey or water, giving rise to the panchera/pancho. New dehydrated rennet is added, as its strength to coagulate the milk (curd formation) decreases.

Analyses on 5 rennet-ferments from traditional producing areas of the country (3 Salta, 1 Jujuy, 1 La Rioja) resulted in: pH 3.8±0.3 (CV=9%); mesophilic aerobic bacteria counts (RAM, plate count agar, 30°C, 72 h) 6.0-8.0 log cfu/g (only one case of 2 log cfu/g), total coliforms (VRBL agar, 37°C, 24 h) less than 1.5 log cfu/g and fungi/yeasts (chloramphenicol glucose agar, 25°C, 7 days) up to 6.7 log cfu/g, mostly yeasts. It was possible to associate the presence of lactobacilli and enterococci to the AMR count, as they were between 4.5-8.0 log cfu/g. The barrier and biodiversity potential of the panchera was verified, leading to further studies to expand this knowledge.

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