

Goat milk yogurt with improved properties

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Abstract

Milk and dairy products are indispensable food products for human nutrition, as they are important suppliers of proteins, fats, vitamins and minerals (especially calcium).

In recent years, goat's milk has attracted the attention of dairy producers due to its balanced chemical composition and special functional properties. Also, goat's milk has therapeutic benefits for people with certain dietary problems, being traditionally recommended for infants and people allergic to cow's milk or being lactose intolerant. However, this group of consumers cannot omit dairy products from their daily diet, due to the rich intake of macro and micronutrients important for human nutrition.

In this context, also taking into account the benefits of goat's milk compared to cow's milk, the aim of the work was to diversify the dairy products variety as well as consumer groups by obtaining lactose-free fermented dairy products from goat's milk through different hydrolysis processes.

For the research, samples of classic yogurt and lactose-free yogurt (non-hydrolyzed yogurt, the yogurt that was hydrolyzed before fermentation, and the co-hydrolyzed yogurt) from local goat's milk with a fat content of 5.5%, protein 3.0% and lactose 4.45% were manufactured in the laboratory conditions. Yogurt starter cultures containing *Streptococcus thermophilus*, *Lactobacillus delsubreueckii* subsp. *bulgaricus*, *Lactobacillus acidophilus*, *Bifidobacterium* were used. Commercial enzymes β -galactosidase obtained from *Bacillus licheniformis*, activity 5500 BLU·g-1 NOLA Fit 5500 were used for lactose hydrolysis.

The degree of lactose hydrolysis was determined in accordance with the method for the measurement of lactose in low-lactose and lactose-free products under Standard Method Performance Requirement (SMPRVR) 2018.009.

According to the obtained data, in the non-hydrolyzed yogurt sample, lactose hydrolysis was achieved only under the action of β -galactosidase synthesized by the lactic acid bacteria from the starter culture, the hydrolysis degree reaching the lowest values (up to 14%), and in the case of the yogurt samples obtained from pre-hydrolyzed and co-hydrolysis milk, at the end of the fermentation period, an advanced hydrolysis degree is reached (over 80%).

Both pre-hydrolysis and co-hydrolysis of milk accelerate the fermentation process in yogurt manufacturing, suggesting that the lactose hydrolysis process improves the fermentation process and the lactose-free yogurt quality attributes.

However, the process of obtaining yogurt by co-hydrolysis reduces the yogurt production time by excluding the lactose pre-hydrolysis technological stage and, respectively, the production costs. The optimal method from the economic, technological and quality index characteristics point of view is to obtain lactose-free yogurt through co-hydrolysis.

Keywords: goat's milk, free-lactose yogurt, lactose, lactase, intolerance, enzymes.

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