Appealing white cheese with low protein

How to cut costs and maintain quality with Nutrilac® milk proteins

Abstract

White cheese such as feta is a popular consumer staple in the Middle East and North Africa. As fresh milk is scarce, most white cheese production in the region is based on recombined milk, comprising milk or vegetable fat, protein and water. Thanks to modern technology and expertise, it is possible to produce recombined milk with sensory properties very similar to that of fresh milk. This has a direct impact on the sensory quality of the cheese.

Due to the challenged economies of major Middle Eastern and North African markets, many white cheese producers today are under pressure to reformulate their recipes and make them cheaper. The primary objective is to reduce the protein in the recipe and increase the content of less expensive vegetable fat – without compromising the quality of the final product.

This white paper covers the challenges involved in producing low-protein white cheese and includes the results of application trials using Nutrilac® milk proteins as a possible solution.

Arla Foods Ingredients

Discovering the wonders of whey

The technical challenges

- Cost-cutting pressure
  Challenged national economies require manufacturers to cut raw material costs and reformulate white cheese recipes so consumers can continue to afford their products.

- Low sensory quality
  Cutting raw material costs typically means reducing protein content. The creaminess, texture, taste and appealing white colour of white cheese are hard to maintain in low-protein recipes.

Low-cost strategy for white cheese

For many manufacturers, the cost-cutting agenda is about reducing the protein content of white cheese from around 13% to 5% or even lower, while increasing the level of vegetable fat (figure 1). In our trials at Arla Foods Ingredients, we have investigated the possibility to achieve this goal using Nutrilac® milk proteins in recombined white cheese production. This involves mixing melted vegetable fat with water and then adding Nutrilac® for rehydration in that mixture. The standard procedure for white cheese production is then followed.

From a processing standpoint, Nutrilac® has good rehydration properties, tolerates pasteurisation and helps create the optimum coagulum after rennet addition.

	Protein	Vegetable fat
Standard recombined white cheese	8-13%	16%
Low-protein recombined white cheese	4-5%	25%

Figure 1. Protein and fat content of standard and low-protein recombined white cheese

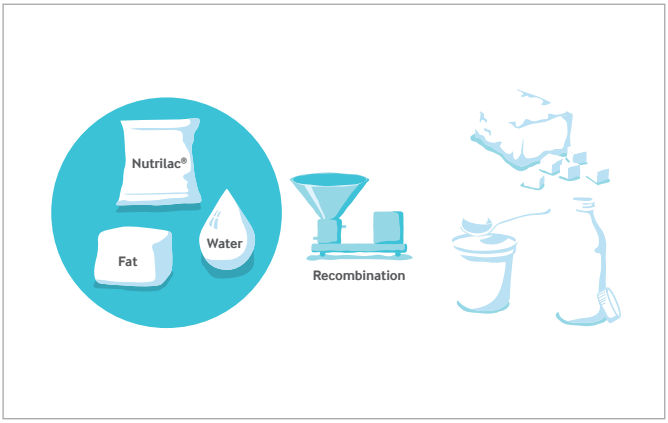

Figure 2. The recombined white cheese process with Nutrilac®. After recombination, the standard procedure for white cheese production is followed.

Three steps to recombined low-protein white cheese

Step 1:

- Mix water and vegetable fat at 50°C
- Add Nutrilac® milk protein powder and skimmed milk powder
- Mix for 5 minutes
- Hydrate for 30 minutes while stirring slowly
- Heat in a plate heat exchanger to 65°C
- Homogenise under high pressure at 125 bar
- Pasteurise at 80°C for 15 seconds
- Cool to approx. 42°C

Step 2:

- Add glucono delta-lactone (GDL), salt and rennet mixtures to milk base
- Fill into bricks or canisters

Step 3:

- Acidification/renneting at 25-30°C until the pH reaches 4.25
- Chill at 5-7°C for 3-5 days
- Distribution and ambient storage

Sensory performance

A sensory evaluation compared two 4.5% protein white cheese products made with Nutrilac® or milk protein concentrate (MPC), respectively. The spider diagram in figure 3 shows that Nutrilac® provides the best texture and mouthfeel all round. The pictures in figure 4 further illustrate the superior breakability and spreadability of the recipe with Nutrilac®. A bake stability test has also confirmed that white cheese with Nutrilac® keeps its shape during baking.

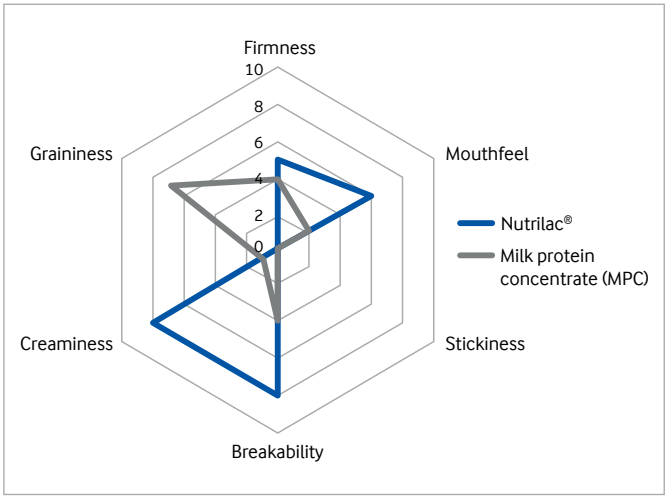

Figure 3. Sensory evaluation of 4.5% protein white cheese after one week. Firmness, mouthfeel and creaminess are improved in the sample with Nutrilac® CH-7694

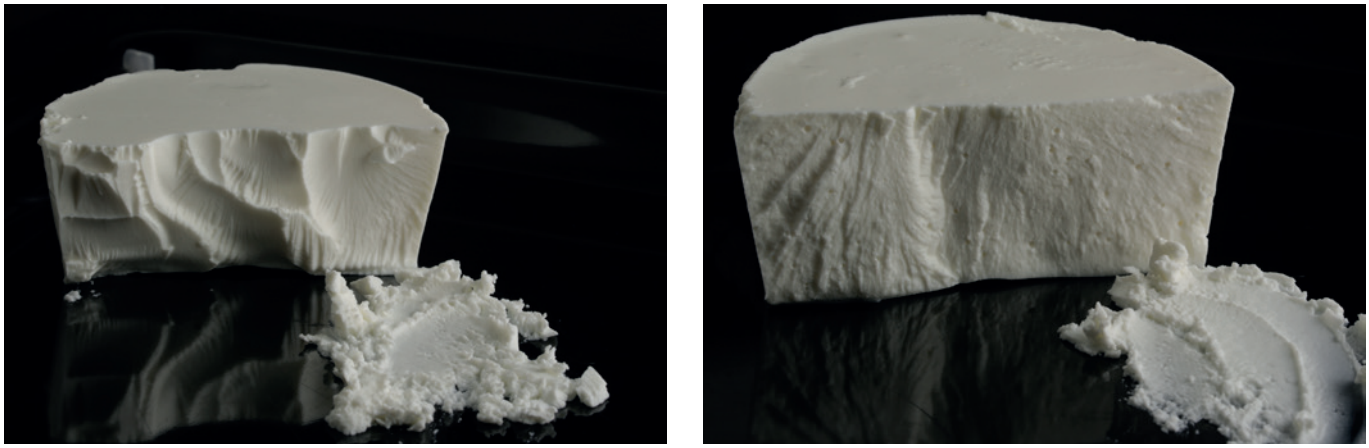

Figure 4. Recombined white cheese with Nutrilac® CH-7694 (left) and MPC (right). Nutrilac® CH-7694 improves breakability and reduces graininess

Summary

Manufacturers of recombined white cheese can overcome major quality challenges when cost-optimising their recipes to meet market demand for lower prices. Trials at Arla Foods Ingredients confirm that Nutrilac® milk proteins perform better than milk protein concentrate in recombined white cheese with a reduced protein content and higher level of vegetable fat. Sensory quality is easily maintained.

Don’t hesitate. Get in touch

Interested in learning more about how you can use Nutrilac® to optimise low-protein white cheese? Just send us a mail, and we’ll get back to you as soon as possible.

Write to dairy@arlafoods.com

ASK US FOR: samples, recipes, application support

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