

# The application of albumin for development dairy product enriched with semolina

## Editorial

Creating multi-component products should be based on science data about nutrition and individual nutrients role in maintaining health issues, the body's need for individual nutrients and energy, the real structure of nutrition and actual supply of nutrients. Dairy-plant products could improve the nutrient status of the population.

Our research team conducted studies of the cheese whey and curd whey, ways of obtaining proteins from whey and their further use in dairy-plant products.<sup>1,2</sup>

The aim of the paper is to present the results of the creation of albumin-based dairy-plant product with semolina.

The research problem are (1) to choose the parameters of obtaining albumin from whey, (2) the development of technology and formulations of albumin-based dairy-plant product with semolina, (3) a study of developed product shelf life.

It is established that the albumin for the dairy-plant products should be produced from cheese whey. Cheese whey is not need to pre-deoxidizing and the albumin has a high organoleptic characteristics. The best way to obtain albumin is coagulating the albumin in the whey with heat and acid. As coagulant it is possible to use sour whey and hydrochloric acid. Thus as the dairy-plant products basis is proposed to use albumin from cheese whey. For homogeneous consistency the albumin was pre-treated on a vacuum pulse disperser.

We investigated the possibility of stabilizing the dairy-plant products consistency by including semolina in the recipe. Usage semolina without pre-processing leads to obtaining dairy-plant product with crumbly texture. If semolina is pre-swollen in water or

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milk then texture of dairy-plant product is more soft and tender. If semolina is heat-treated in milk, it gives a soft and creamy texture. The including semolina in the recipe up to 5,6-5,9% gives the stable dairy-plant product structure. Also we conducted sensory evaluation of the dairy-plant product depending on the semolina processing type. The highest number of points scored sample of dairy-plant product with heat-treated in milk semolina.

For assortment increase it was offered to include in the recipe of dairy-plant product some flavouring ingredients: cocoa, mashed apples, mashed carrots and mashed pumpkins. So we developed formulations of albumin-based dairy-plant products with semolina (Table 1).

**Table 1** Dairy-plant product formulation (per 100kg)

Ingredients	With cocoa	With apple, carrot or pumpkin puree
Albumin	39.7kg	37.0kg
Sugar	5.9kg	5.6kg
Milk With Fat Content 2,5%	43.7kg	40.7kg
Cream With Fat Content 20%	4.0kg	3.7kg
Semolina	5.9kg	5.6kg
Cocoa Powder	0.8kg	-
Apple, Carrot or Pumpkin Puree	-	7.4kg

The study of the microstructure is also necessary to analyze the consistency of the product. In the dairy-plant product with cocoa we can see round shaped particles of cocoa and air bubbles. Semolina can be seen as small round inclusions. Also visible are denaturated whey protein particles. Dairy-plant product with puree has a similar microstructure, but instead of the cocoa particles we can see blotches of puree. If we use semolina without pre-processing we can see in the dairy-plant product microstructure angular particles of ungelatinized semolina.

For determining the shelf life of dairy-plant product we did microbiological crops on the Saburo nutrient medium and also determined titratable acidity and active acidity after 3-5-7days of the product storage.

During storage organoleptic characteristics of the product are changing. On the third and fifth day of storage the taste and smell of the product almost not changed. On the seventh day product become excessively acidic because of higher titratable and active acidity, also off-flavors appeared. On the third day of storage consistency was homogeneous without separation of moisture on the surface of the product. On the fifth day of storage a slight amount of free moisture on the surface of the product appeared. On the seventh day the amount of moisture on the surface increased.

The color of the dairy-plant products with cocoa or apple puree remained unchanged on the third, fifth and seventh day of storage. The color of the dairy-plant products with carrot or pumpkin puree becomes slightly inhomogeneous on the seventh day of storage. It

was determined that dairy-plant product with cocoa is less susceptible to moisture on the product surface and have more stable consistency during storage than dairy-plant products with puree.

During research we have developed the technology and formulations of albumin-based dairy-plant product with semolina and flavouring ingredients. The novelty of the idea patented.<sup>3</sup>

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## Conflict of interest

Author declares that there is no conflict of interest.

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