

## WHEY WASTELESS PROCESSING: ELECTROACTIVATION OF WHEY WITH MEDIUM PROTEIN CONTENT

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Milk primary processing allows the production of different types of dairy products and cheeses which results in large quantities of various secondary dairy products (whey, buttermilk, skimmed milk, caseinate, ultrafiltrate, etc.) with varied solid content and a valuable nutritional composition (over 200 components). The overall amount of whey produced is estimated at about  $180-190 \cdot 10^6$  tons / year, of which only 50% is processed. The solid content of whey (7-8%) is 50-70% of that of the initial milk. In whey passes almost all lactose and the most valuable protein fractions ( $\alpha$ -lactalbumin,  $\beta$ -lactoglobulins,  $\gamma$ -immunoglobulins), which are not retained in primary dairy products, as well as a number of macroelements, microelements and vitamins. One of the most acute problems discussed in the world is the wasteless processing of whey, which includes both the efficient use of its components and the protection of the environment. The efficient use of the solid content of whey is performed by different methods, which allow obtaining a wide range of highly nutritious whey products. Electrofractionation of protein mineral concentrates obtained from whey with medium protein content (collected at the Joint Stock Company "JLC", Chisinau, RM, after the manufacture of cottage cheese, 2% fat content) at different processing regimes (stationary regime, current density electric  $j = 10 - 20\text{mA} / \text{cm}^2$ , collection of whey in the form of foam every 10 minutes (10-30 min - processing time)), by electrophoretic analysis with SDS-PAAG 15 % of the content of protein fractions soluble in 0.05 M Tris-HCl buffer, 0.5 M NaCl, 0.5 mM EDTA (0.04% NaN<sub>3</sub>), pH 8.0, demonstrates:

- maximum extraction of  $\beta$ -lactoglobulin from the first minutes of processing (about 70%);
- extraction of the  $\alpha$ -lactalbumin fraction, which has an ascending character of accumulation in protein mineral concentrate from 10%, which increases towards the end of processing (about 40%);
- extraction of high molecular weight protein compounds, including bovine serum albumin, lactoferrin, etc., which are extracted depending on the type of whey processed and varies about 3-15% and has an ununiform character;
- casein extraction, depends on their presence in the initial whey and has an ununiform character.

The different and ununiform extraction of protein fractions in protein mineral concentrates by electro activation of whey with medium protein content is conditioned by the properties of each fraction and their behavior at different electrochemical activation regimes. The correct management of electroactivation with different processing regimens will allow the electrofractionation of different types of secondary dairy products.

**Keywords:** *electrofractionation, electrophysical processing, protein fractions, protein-mineral concentrates, secondary dairy products.*

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