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The Recovery of Alpha-Lactalbumin at the Electroactivation of Whey

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Abstract

The electroactivation of whey allows the recovery of α-lactalbumin in the protein mineral concentrates depending on the processing regimes, variation of the pH values, temperature, and the processing duration. The presence of α-lactalbumin in the lactose synthetase complex explains its recovery in the protein mineral concentrates towards the end of the processing at the maximum isomerization of lactose into lactulose according to the Amadori mechanism. During the electroactivation of whey, favourable conditions for the “capture” of α-lactalbumin in protein compounds have been created. Electroactivation allows the recovery of whey proteins into protein mineral concentrates, ennobling them with certain protein fractions at different processing regimes and obtaining concentrates with a predetermined protein content at the simultaneous isomerization of lactose into lactulose. The nanostructuring of protein systems during the electroactivation of whey makes it possible to extract different whey proteins, especially α-lactalbumin which is recovered in mineral protein concentrates due to multiple inter- and intramolecular mechanisms and creates optimal conditions for ennobling mineral protein concentrates with α-lactalbumin. The intensive saturation of the whey with calcium ions, which migrate from the anode cell through the cation exchange membrane in the cathode cell, favors the formation of different protein complexes, especially of α-lactalbumin with bivalent ions.

Keywords: whey, lactose synthetase complex,·protein mineral concentrates, Alpha-Lactalbumin, electroactivation

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