CONVERSION OF WHEY COMPONENTS DURING ELECTRICAL DISCHARGE PROCESSING

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The article studies the possibility of accomplishing electrical discharge dispersion of electroconductive metal granules in milk whey with the aim of their enrichment by bigeneric particles of magnesium and manganese. The object of the study is milk whey of cheese – skimmed and purified of casein dust particles. Electrical discharge process was performed on experimental technological complex consisting of charge impulse generator, control block, charge chamber, measuring and auxiliary equipment. Duration of processing varied between 30 and 120 seconds. Content of metal elements in whey patterns was measured by atom absorption spectrometry method with the use of atom absorption spectrometer AAS1N (Carl-Zeiss Jena, Germany).

The possibility of enriching whey particles of magnesium and manganese during electrical discharge processing was determined. As long as these elements are catalysts to many processes, including acceleration of lactose transformation under certain conditions, physicochemical processes under electrical discharge dispersion of whey were studied.

Results of physicochemical surveys of whey before and after electrical discharge dispersion in the layer of electroconductive metal granules are presented. The directions of possible conversion components of whey during electrical discharge processing was proposed. It was observed increasing of the pH and decreasing of the redox potential in the whey during the electrical discharge processing, which suggests interaction between the particles of magnesium and manganese with whey components, namely lactic and citric acid, lactose.

Diffraction patterns of milk whey samples before and after processing are presented. Appearance of new peaks in the diffraction pattern of whey at \(2\Theta = 13, 22, 31 \) and 41 after electrical discharge processing confirms changes in the whey structure. It was established that the increased time of exposure to 2 minutes leads to destruction of crystal structure of whey and its transition to roentgen amorphous state.

**Keywords:** whey, lactose, electrical discharge processing, magnesium, manganese.