RESEARCH OF RECONSTITUTED WHEY PARTICLE SIZE CHANGING DURING ITS STORAGE

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Abstract

Dry whey is widely used in different types of foodstuffs as a powder and as a liquid solution that must be reconstituted and has the properties, which should be the same as for natural whey. There are some methods that are used for whey reconstitution in food industry. Cavitational disintegration is one of the prospective and new method of stable solution making that can be implemented instead of traditional ones like mechanical homogenization. The goal of the research work was to study the different methods of the dry whey reconstituting and to determine their influence on average value of the hydrodynamic radius of the dry whey particles at its storage for 3 hours.

The three variants of reconstituted whey made on the different kind of activated water were used as objects of research. All samples had the same concentration of the dry whey which was equal to 15%. Sample 1 was made on the ordinary water by homogenization on the blender. Samples 2 and 3 were treated by cavitational disintegration (CD) and the sample 2 was made by the ordinary water and the sample 3 was obtained by the catholyte of electrochemically activated water. Method of photon correlation spectroscopy wasused for measuring the whey particles sizes (nm) by using of the spectrometer of the dynamic light scattering “PhotocorComplex”. The scanning force microscope Ntegra was used for reconstituted samples study.

It was established that the traditional mechanical homogenization and ordinary water is not effective for dry whey reconstitution as there were no any desired condition for dissolving of dry whey and forming of the stable suspension. The sample 2 had more homogenized and fine system when the average value of the particles radius (34.63 nm) in 2.1 times less than the same particles in the sample that was made by mechanical homogenization (73.41 nm). The sample 3 had the least average value of the particles radius (22.59 nm) that was in 3.3times less than in the sample 1 and in 1.5 times less that in sample 2.

Reconstituted whey has more homogenized and stable structure and was less influenced to fractionation when this method was used. The results of research allow recommending the cavitational disintegration method usage for reconstitution of the whey made on the catholyte of the electrochemical activated.

Key Words: *Whey, Reconstituted whey, Storage, Cavitational disintegration, Catholyte or alkaline water, Suspension stability.*