WATER PHASE OF BUTTER FORTIFIED CARROT POWDER

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The current development of food industry is closely connected with the creation of products that are rich in micronutrients. According to modern conception of healthy food it must be a harmoniums combination of traditional food with natural additives. Immunemodulatory and radioprotective properties of carrot are well-known and widely used around the world. Carotenes are often used to improve the treatment of cancer and heart disease. That is why, the new technologies of fortifying butter with carrot powder of cold spray drying was developed. Proposed technological scheme provides the introduction of specially prepared powder suspension of carrots into butter during its homogenization. It was found that the recommended amount of powder in the finished product is within 1,2%.

In previous papers we noted that the butter structure formation is influenced by the additive and its microstructure. So, we analyzed the microstructure of water solution of selected additives. It was established that suspension of carrot powder, produced by cold spray drying contains big and small parts (15-80 micrometers, 1-5 micrometers). Microstructure of recovered particles are similar to those of a fresh vegetable. In water a suspension has fractal structure. Spherical structures and areas of the cellular structures, formed from polyhedra (size edges up to 12 micrometers) have been identified.

The changes that occur in the aqueous phase of enriched butter were studied. According to our results we have developed the mechanism of interaction of plasma with additives particles. It was determined that adding supplements of carrot powder obtained by cold spray drying leads to increasing the quantity of multimolecular bound moisture, slowing confluence of moisture droplets in the finished butter.

KEY WORDS: butter, carrot powder, cold spray drying, technology of fortifying, butter plasma, forms of bond moisture