

THE MECHANISM OF AN AMORPHOUS-CRYSTALLINE FAT FORMATION IN THE SUBMICROSTRUCTURE OF BUTTER

I.S. Guiyi, T.A. Rashevskaya, M.O. Pryadko,

Ukrainian State University of Food Technologies, Kiev, Ukraine

M.M. Nishchlenko, S.P. Likiitorovich,

Institute for Metal Physics, Kiev, Ukraine

The processes of the butter structure formation have been studied by the electron microscopy method which showed that it contains destroyed and partially impaired fat globules. Crystalline shells, consisting of concentric monomolecular layers, are formed on the globules surface. The interglobule structure of the butter contains many crystalline layer aggregates distributed in the amorphous fat. For the first time the ultradisperse isotropic and anisotropic moisture particles have been identified on the electron-microscopic photographs of the butter microstructure. The role of the ultradisperse moisture in formation of the crystalline sub-microstructure of the milk-fat phase has been determined. Flat boundaries of the spreading amorphous layers and the crystalline layers separation boundaries are the centres of the ultradisperse moisture particles formation in butter. Long quasi-one-dimensional chains of moisture particles, located along the separation boundaries have been detected. In the butter storage process many plate crystals 'crack' and are formed in the crystalline layers structure. Quasi-one-dimensional chains of the ultradisperse moisture particles are formed on the boundaries of the plate crystals separation.