PHASE STATES OF DIMYRISTOILPHOSPHATIDYLCHOLINE UNDER THE DSC CONDITIONS VARIATIONS OF MODEL MULTILAMMELAR LIPOSOMES MELTING

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Dimyristoilphosphatidylcholine (DMPC) synthetic saturated phospholipid was chosen for formation of model multilammelar liposomes. As of method, corresponding of this model possibilities differential scanning calorimetry DSC was used. The first order of phase transitions of DMPC were heated and cooling was registered when several rates of models heating with constant pressure [1]. The multiple repetitions of melting and cooling processes (Reheating) held for consecutive the analyses of impact of biologically active substance on restructuring in membrane, dependent on temperature changes. The model of large multilammelar liposomes, shaped from DMPC or egg phosphatidylcholine, reflects the structure of multilayer membranes in the cell. Some examples are: endoplasmic reticulum, the Golgi apparatus, mitochondria. Stowage period of membranes in big multilayer liposome formed from egg phosphatidylcholine, ~ 6,9 nm [2]. Same the distance in the muscle cells exists between calcium depot - sarcoplasmic reticulum (terminal cisterns), and exterior cell walls - plasma membranes. Bilayer thickness of liposome membrane formed from egg phosphatidylcholine was ~ 4 nm [2] that also was corresponded of nature bilayers sizes. The using of DMPC multilammelar liposomes melting variations are the essential DSC method modifications. These modifications permitted us to simulate of temperature changes, which may exist both in individual compartments of cells, and in whole cells. Besides of local cell changes in the rate and temperature repetitions at membrane compartments, the great lowering of temperature occurs when hibernation, when stepping out of hibernation condition the temperature on membranes, on the contrary, are going up. Same changes occur when usual sleeping, but those are less significant.

References.

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