Interaction between phospholipids and hyaluronan – a fluorescence probe study (COST)

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In the formulation of new therapies and medical strategies a delivery systems, which can carry and release selected hydrophobic drug, play an important role. The delivery systems must meet the hard criteria e.g. biocompatibility and/or biodegradability. These criteria can be fulfilled when all components of delivery system will be body-natural.

This study is focused on determination of aggregation behavior of selected phospholipids (lecithin; 1,2-dipalmitoyl-sn-glycerol-3-phosphocholine - DPPC) in a presence of native hyaluronan in different molecular weights and concentrations. Phospholipids were used as common surfactant without special procedure to reach e.g. liposome. The aggregation behavior and interaction have been investigated with fluorescence spectroscopy using pyrene and perylene as fluorescence probes. These both probes are able to penetrate into hydrophobic cavities of formed aggregates and bring information about local polarity [1,2].

Critical aggregation concentration and the concentration at which lecithin begins to aggregate have been determined. In case of DPPC, it was possible to determine only the beginning of aggregation value. The values of this parameter for lecithin and for DPPC correspond in the order. It has been investigated, that the addition of native hyaluronan has only in some systems slight effect on the aggregation behavior of selected phospholipids.


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