The influence of mature lysozyme fibrils on the structural and physical properties of model membranes composed of phosphatidylcholine (PC) and its mixtures with cardiolipin (CL) (10 mol%) and cholesterol (Chol) (30 mol%) was studied using fluorescent probes DPH, pyrene, Laurdan and MBA. Analysis of pyrene fluorescence spectra along with the measurements of DPH fluorescence anisotropy revealed that the structure of hydrocarbon chains region of lipid bilayer is not affected by the fibrillar aggregates of lysozyme. In contrast, probing the membrane effects by Laurdan and MBA showed the rise of both the generalized polarization of Laurdan and the MBA fluorescence anisotropy, suggesting that amyloid protein induces reduction of bilayer hydration and increase of lipid packing in the interfacial region of model membranes.