

One of the popular approaches to study cell membranes is to study lipid mixtures phase behaviors. Although the structure of compositionally simple binary and ternary lipid systems have been extensively studied in the last three decades, the effects of proteins on compositional complexity of biological membranes have not been studied in details. Since in some biological membranes, the majority of membrane area is covered by proteins (up to 60-70%), it is reasonable to suppose that membrane proteins would have large effects on bilayer phase behavior. In this work, the effects of adding 1mol% of poly-peptide gramicidin-A to the well-known DOPC/DSPC/cholesterol lipid mixtures were investigated. Gramicidin-A is a trans-membrane protein mainly known as ion channel. Gramicidin-A is an excellent model system for lipid-protein interactions, conformational studies of membrane ion channels, and mechanisms of ion permeation.