

THE INVERTED LIPID STRUCTURES AND THEIR ROLE IN BIOLOGICAL PROCESSES

Summary

Lipids may form two main types of structures: bilayer, and inverted structures. The inverted structures can form either cylindrical inverted hexagonal structures or spherical and have inverted micelles known also as cubic phase. The type of structure formed depends on the chemical texture of lipids, degree of hydration of their polar groups, and several other external factors, such as pH, temperature, and presence of some chemicals or salt ions. The inverted structures play an important role in several biological processes. They can promote membrane fusion. This was applied to design of lipid based delivery systems for a lot of chemicals which have

to be placed inside the cells. These structures are also used in the so-called micellar enzymology and as a new approach in homogeneous enzyme immunoassay utilizing the systems of surfactant reversed micelles in organic solvents for determination of the catalytic activity of the enzymes solubilized in such systems. Cell-free translation was also observed in reversed micelles. Some enzymes as violaxanthin de-epoxidase, protein kinase C and ATP-ase require for their activity lipids creating inverted structures. These lipids are also necessary in the transport of some proteins through membranes.