

Calorimetric approach to biomembrane thermodynamics: spotting the key points

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The investigation of the forces that drive the self-assembly of phospholipid bilayers and that induce a particular thermodynamic behaviour is crucial for the determination of their roles in biological environments. For this reason, proper consideration should be paid to both endogenous and exogenous factors involved in biomembrane stability.

In this frame, a stepwise study of vesicles with different morphology and lipid composition was performed through high-sensitivity differential scanning calorimetry at physiological pH with the purpose of comprehending the role played by some of the main factors that contribute to the thermodynamic stability of cell membranes, *e.g.*, lamellarity, curvature, phospholipid/non-phospholipid composition [1,2].

The nature and the magnitude of the effects arising from the interaction of lipid membranes with several external agents, such as proteins, lipids and other compounds, have also been evaluated in different case studies [3,4]. The high sensitivity of the DSC technique in revealing modifications in membrane thermodynamic stability is noteworthy for gaining insights on molecular aspects of the interaction mechanism, leading to several applications in biological, food and pharmaceutical fields.

References

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