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Thermodynamics of pluronic 103 micellization in mannitol solution: Analyses based on isothermal titration calorimetry**Jayant Sarolia***Uka Tarsadia University, India*

This study describes the effect of sugar incorporation upon micellization behaviour of pluronic 103 (P103), a linear triblock copolymer. Mannitol (MTL) was used as a sugar and its effect was investigated over a concentration range of 0.1 to 1 M. Our interpretations on changes in the thermodynamics P103 micellization are based on isothermal titration calorimetry (ITC) experiments. Thermodynamic parameters were calculated after plotting the enthalpy against temperature and MTL concentration. The data were acquired at six temperatures in the range of 302.5 to 312.5 K. A significant reduction in CMC was witnessed following increase in solution temperature and MTL incorporation. We show that enthalpy barrier of micellization reduced in the presence of MTL. The data of Gibb's free energy of micellization (ΔG°_{mic}) exhibited a steady decline during increase in MTL concentration. These changes were attributed to modulation of water structures in the microenvironment of micelle interface. Linearity of enthalpy-entropy compensation underscored the role of temperature in regulating copolymer-solvent interactions.

Biography

Jayant Sarolia has pursuing his PhD from Uka Tarsadia University and working under UGC-DAE CSR project. He is junior research fellow at National Institute of Pharmaceutical Education and Research. He has published more than 6 papers in reputed journals and has been serving as a reviewer of Elsevier journal.