Appl Biochem Biotechnol (2015) 176:2077–2106
DOI 10.1007/s12010-015-1712-1

Surfactant–Amino Acid and Surfactant–Surfactant Interactions in Aqueous Medium: a Review

Nisar Ahmad Malik[1]

Received: 7 December 2014 / Accepted: 9 June 2015 /
Published online: 10 July 2015

Abstract An overview of surfactant–amino acid interactions mainly in aqueous medium has been discussed. Main emphasis has been on the solution thermodynamics and solute–solvent interactions. Almost all available data on the topic has been presented in a lucid and simple way. Conventional surfactants have been discussed as amphiphiles forming micelles and amino acids as additives and their effect on the various physicochemical properties of these conventional surfactants. Surfactant–surfactant interactions in aqueous medium, various mixed surfactant models, are also highlighted to assess their interactions in aqueous medium. Finally, their applied part has been taken into consideration to interpret their possible uses.

Keywords Amino acids · Surfactants · Surfactant–amino acid interactions · Surfactant–surfactant interactions

Introduction

Proteins and Amino Acids

Proteins are the biomolecules which play a vital role in all the biochemical processes occurring in living organisms. Their behaviour can be governed by their interactions with the surrounding environment. In order to understand the role played by biological molecules in the living organism [1], it is necessary to study the thermodynamic stability of native structure of protein. It has proved quite challenging and still remains a subject of extensive research [2] for the researchers. Proteins are organic compounds made of amino acids arranged in a linear chain and folded into a globular form. Generally, the polypeptides with less than 40 amino acids are termed as peptides. Naturally occurring polypeptides with more than 40 amino acids are proteins. The equilibrium conformation adopted by the protein is a sensitive function of residue composition, sequence and solvent environment. There are two major classes of

✉ Nisar Ahmad Malik
nisarchmjmi@gmail.com

[1] Islamic University of Science and Technology, Awantipora, Pulwama, Srinagar 192122, India