Spectrofluorometric Studies on the Interactions of Bovine Serum Albumin with Dimeric Cationic Surfactants

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Abstract : Over the past few decades protein-surfactant interactions have been a subject of extensive studies as they are of great importance in wide variety of industries, biological, pharmaceutical and cosmetic systems. Protein-surfactant interactions have been explored the effect of surfactants on structure of protein in the form of solubilization and denaturing or renaturing of protein. Globular proteins are frequently used as functional ingredients in healthcare and pharmaceutical products, due to their ability to catalyze biochemical reactions, to be adsorbed on the surface of some substance and to bind other moieties and form molecular aggregates. One of the most widely used globular protein is bovine serum albumin (BSA), since it has a wellknown primary structure and been associated with the binding of many different categories of molecules, such as dyes, drugs and toxic chemicals. Protein-surfactant interactions are usually dependent on the surfactant features. Most of the research has been focused on single-chain surfactants. More recently, the binding between proteins and dimeric surfactants has been discussed. In present study interactions of one dimeric surfactant Butanediyl-1,4-bis (dimethylhexadecylammonium bromide) (16-4-16, 2Br-) and the corresponding single-chain surfactant cetyl trimethylammonium bromide (CTAB) with bovine serum albumin (BSA) have been investigated by surface tension and spectrofluoremetric methods. It has been found that the bindings of all gemini surfactant to BSA were cooperatively driven by electrostatic and hydrophobic interactions. The gemini surfactant carrying more charges and hydrophobic tails, showed stronger interactions with BSA than the single-chain surfactant. Keywords: bovine serum albumin, gemini surfactants, hydrophobic interactions, protein surfactant interaction Conference Title : ICCBPE 2016 : International Conference on Chemical, Biochemical and Process Engineering

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