

BIO-BASED SURFACTANTS FOR BENIGN COSMETIC PRODUCTS: PRINCIPLES AND APPLICATIONS

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Bio-based surfactants offer a unique opportunity alone as well as mixed with traditional surfactants to meet the increasing demand for benign cosmetic actives in this era of concern for toxicity of chemicals. Our overall aim is to understand interactions of typical bio-based surfactants with biosurfaces. Sugar based alkyl glucosides, sophorolipids and protein based surfactants show high surface activity and salt tolerance. Importantly, when mixed with conventional surfactants the systems exhibited synergistic interactions that are useful for reducing the dosage requirements and thus the resultant chemical foot print. The unique surface activity and biodegradability make this group of surfactants potential candidates for future cosmetic agents. The interfacial and colloidal properties of these reagents play critical role in determining their performance in many other industrial applications, such as detergency, enhanced oil recovery and water treatment. We are now exploring the next generation greener and microbial (genetically engineered) and plant-derived based surfactants which show robust emulsification properties and self-assembly behavior of systems involving oil. We also explore role of these surface active agents in the design of novel nano-systems as active drug carriers and disease diagnosis.