M Hossain, J Biotechnol Biomater 2016, 6:6(Suppl)
http://dx.doi.org/10.4172/2155-952X.C1.061

2nd World Congress on
Bio Summit & Molecular Biology Expo
October 10-12, 2016 Dubai, UAE

Membrane extractions and adsorptions in separation of biomolecules from multi-component mixtures

M Hossain
United Arab Emirates University, UAE

Separations based on membrane-based extractions and adsorptions have been demonstrated to be potentially selective process for biomolecules such as antibiotics and proteins. These methods offer the advantages of strong affinity between the target solutes in various phases and additional interaction between the charges of the molecules and the exchangeable charge groups in the membrane. Recently efforts have been intensified to develop separations based on solvent extractions using membranes or simple adsorption on membrane that provide simplicity in the process, selectivity in separation and faster recovery of the solutes. In this article experimental results obtained using commercially available membranes and membrane modules are presented. The systems considered were: (1) Separation of an antibiotic from its mixture and (2) separation of major whey proteins, α-lactalbumin (α-La), β-lactoglobulin (β-Lg) and bovine serum albumin (BSA). Experiments were performed in a bench-scale hollow-fibre membrane contactor using an eco-friendly solvent for the system in (1) and for (2) a laboratory-scale ion exchange membrane unit; Sartobind® Anion Exchanger-D75 was used. The processes showed superior selectivity in antibiotic separation and good capacity for adsorption of proteins. The results are considered very well because these were obtained with commercially available membrane units and in a wide range of solute concentrations. These processes have the potential to be upgraded to selectively separate a desired component from a multi-component mixture when optimized conditions are determined.

Biography

M Hossain was graduated from the Department of Chemical Engineering, Bangladesh University of Engineering & Technology (BUET) in 1977. He has obtained his MEngSci in 1985 and PhD in 1988 from the University of Queensland, Australia. After several years of research at IRL he then joined as a Senior Lecturer at the Department of Chemical & Materials Engineering, University of Auckland, New Zealand. He is involved in teaching Chemical Engineering (Thermodynamics, Transport Processes and Reactor design), Biochemical Engineering (Biotechnology and Bioseparations), Water Desalination and Water Treatment. He has published more than 67 research papers in international journals and presented 65 articles at the international/national professional conferences. His current research interests are membrane technology to chemical & biochemical processes and removal of ions (inorganic and organic ions) from water and wastewaters.

mmonwar@uaeu.ac.ae

Notes: