

Protein partitioning in polyethyleneglycol/potassium phosphoric acid aqueous two-phase systems for purification of membrane protein

배준호, 정창문, 박준택, 장호남
한국과학기술원 생명화학공학과
전화 (042) 869-3952, FAX (042) 869-8800

Bacteriorhodopsin is a light-sensitive protein in the purple membrane of halobacteria and is currently considered as a promising candidate raw material in the design of molecular electron device and optical computers. Despite this diverse and potential possibility, there are still difficulties in yielding bacteriorhodopsin. In the survey of yield and purity among the existing methods, major loss of bacteriorhodopsin was found in the middle step-the condensation of cell membrane fractions by ultracentrifuge. What is worse, it takes a lot of lead time and cost which is of operating and handling. Therefore, in order to develop the separation process for bacteriorhodopsin which is efficient and capable of scale-up, aqueous two phase interfacial condensation is examined. Furthermore, centrifugation and gel permeation chromatography are applied to aqueous two phase system.

References

1. Walter, H., Brooks, D. E. and Fisher, D. (1985), Partitioning in Aqueous Two-Phase Systems Theory, Methods, Uses, and Applications to Biotechnology, 1st ed., Academic Press, inc., Orlando
2. Minuth, T., Gieren, H., Pape, U., Raths, H. C., Thommes, J. and Kula, M.-R. (1997), Pilot Scale Processing Of Detergent-Based Aqueous Two-Phase System, *Biotechnol. Bioeng.* **55**, 339-347.
3. Sivars, Ulf., Tjerneld, Folke. (1999), Mechanism of phase behaviour and protein partitioning in detergent/polymer aqueous two-phase system for purification of integral membrane proteins, *Biochim. Biophys. Acta* **1474**, 133-146.