

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

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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. Also, protein precipitation using ammonium sulfate is examined to compare with two aqueous phase system in yield and purity. Furthermore, centrifugation and gel permeation chromatography are applied to aqueous two phase system.