Large scale preparation of Bacteriorhodopsin to use Biophotonics.

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Abstract

Bacteriorhodopsin was obtained preparatively from purple membrane of *Halobacterium halobium* cell. The structure of this integral membrane protein(Mr 26,000), which binds the chromophore retinal, which is great interest because of it used as a component of molecular electron device and optical computers. In order to increase the productivity of bacteriorhodopsin in high cell density culture *Halobacterium halobium* R1, we found highly activity growth cell. General cell appeared purple after 72 hour but it reached purple after 32 hour. It is very important to productivity of bacteriorhodopsin. Preliminary observations indicated that variability of the quality of bacteriorhodopsin could be related to the growth conditions with several factors affecting the maturation of the protein including light, stirring, temperature, pH, aeration, and composition of the medium. we consider defined media consist of NH_4Cl, KH_2PO_4, $MgSO_4 \cdot 7H_2O$, $MgCl_2$, KCl, Trace element($FeSO_4 \cdot 7H_2O$, $MnSO_4 \cdot H_2O$, $CaCl_2$ 0.5, $ZnCl_2$ 1, $CoCl_2 \cdot 6H_2O$). As a result, the production of cell mass at OD_{600} of 8 and of bacteriorhodopsin at 0.9 mg/(L.hr) were obtained search highly activity growth cell. The productivity achieved by the media screening was 1.5-fold higher than that with complex media.

Reference

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