SEPARATION AND PURIFICATION OF PHYCOCYANIN FROM THERMOSYNCHOCoccus SP. USING A TANGENTIAL FLOW FILTRATION AND GEL FILTRATION CHROMATOGRAPHY

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ABSTRACT

Phycocyanin is a natural blue dye used in pharmaceutical and food industry. In the study, an efficient and simple method to extract phycocyanin from wet biomass is reported. The purification involves a multistep treatment of the crude extract, and followed by tangential flow filtration and gel filtration chromatography. For tangential flow filtration, membrane with MWCO at 50 kDa of surface area 115 cm², and feed flow rate of 40 mL/min, a retention rate of 54% was found to be optimal. Under these filtration conditions, food grade phycocyanin with the purity around 1.18 containing phycocyanin as the major component was obtained. For gel filtration chromatography, pure phycocyanin was finally obtained from Thermosynechococcus sp. with the feed flow rate of 1 mL/min, and the purity ratio and recovery of phycocyanin were (A620/A280) 2.57 and 41%, respectively. Its homogeneity was demonstrated by sodium dodecyl sulfate-polyacrylamide gel electrophoresis (SDS-PAGE), yielding two bands of molecular masses 19 and 20 kDa, corresponding to α and β subunits of the phycocyanin, respectively. The purification process of Thermosynechococcus sp. obtained from this study increased the purity ratio of phycocyanin. This will be further investigated for the development into cosmetic products.

Keywords: GEL FILTRATION CHROMATOGRAPHY

REFERENCES