

Production and purity of phycobiliproteins from selected marine and freshwater cyanobacteria subjected to different drying methods

ABSTRACT

Phycobiliproteins, light-harvesting pigments found in cyanobacteria, red algae and cryptomonad are gaining importance in food, nutraceutical and pharmaceutical industries. Thus, a sustainable source of phycobiliproteins production is an essential consideration in meeting the increasing demand for these natural pigments. The present work aimed to compare the concentration and purity of phycobiliproteins from marine (*Geitlerinema* sp. and *Synechococcus* sp.) and freshwater (*Oscillatoria* sp. and *Spirulina* sp.) cyanobacteria, when subjected to different drying methods viz. sun-drying, oven-drying and freeze-drying. Results showed that the three different drying methods influenced the concentration and purity of phycobiliproteins from the different cyanobacteria. Under oven drying condition, phycocyanin concentration (mg.mL^{-1}) was significantly higher ($P < 0.05$) in marine *Geitlerinema* sp. followed by *Oscillatoria* sp. *Synechococcus* sp. and *Spirulina* sp., respectively, compared to sun-drying and freeze-drying methods. Phycoerythrin and allophycocyanin concentrations were also significantly higher ($P < 0.05$) in marine periphytic *Geitlerinema* sp. when compared to other cyanobacteria subjected to oven drying. In addition, results from oven-dried marine periphytic *Geitlerinema* sp. showed that total phycobiliproteins production and purity ratio of phycocyanin were significantly higher ($P < 0.05$) in comparison to sun-drying or freeze-drying *Spirulina* sp., *Synechococcus* sp. and freshwater *Oscillatoria* sp.

Keyword: Cyanobacteria; Phycobiliproteins; Phycocyanin; Phycoerythrin; Drying conditions