



DETERMINATION OF NUTRITIONAL VALUE OF CYANOBACTERIA AS AN ALTERNATIVE SOURCE FOR FOOD SUPPLEMENT

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Cyanobacteria are biologically photosynthetic organisms inhabiting all over the world including arctic and antarctic region. They are rich with carbohydrates, proteins, vitamins, minerals and fatty acids. Higher photosynthetic ability, rapid growth, low space and nutrient requirement together with low production cost make cyanobacteria are promising candidates for food supplement. Therefore, a preliminary study was carried out to determine the total carbohydrate, total protein content and different sugar types present in different cyanobacteria species. 14 purified axenic strains isolated from different fresh water bodies namely Limnothrix sp. (U03), Cephalothrix komarekiana (U08), Limnothrix sp. (U09), Synechocystis sp. (U12), Croocccidiopsis sp.(U13), Calothrix sp.(U15), Croocccidiopsis sp. (U16), Limnothrix planktonica (U30), Limnothrix sp. (U33), Geitlerinema sp. (U36), Oscillatoria sp.(U40) Synechocystis sp.(U42), Oscillatoria sp (U55) and unidentified sp. (U32) were tested. The Dubois method was used to analyze the total carbohydrate content while the Lowry method was used to determine the total protein content. Different sugar types were analyzed using the Laboratory Analytical Procedure (LAP) where High Performance Liquid Chromatography (HPLC) analysis was carried out to determine the presence of different sugar types in the biomass. The highest protein content was recorded in Limnothrix sp. (77.33%) while the lowest protein content was in Oscillatoria sp. (15.27%). Other samples showed the protein content in the range between 19% to 50%. The highest total carbohydrate content was found in Limnothrix planktonica (56.15%) and the lowest in Synechocystis sp. (3.85%). HPLC analysis showed that Glucose, Galactose, Xylose, Rhamnose, Fructose and Arabinose were presented as sugars in the tested samples. Glucose was the most common sugar type and found in 8 cyanobacteria samples. Galactose was the second highest sugar type being present in 6 samples. Arabinose was found only in Chroococcidiopsis sp. Mannose was not present in any of the tested samples. The study suggested that cyanobacteria can be used as an effective food supplement. Among the cyanobacteria species studied, Chroococcidiopsis sp. and Geitlerinema sp. can be recommended as the best monosaccharides suppliers. Limnothrix sp. containing the highest protein and carbohydrate content and can be recommended as the best alternative food supplement.

Keywords: *Cyanobacteria, Food supplement, Protein, Carbohydrate, Sugars*