

Evaluation of antioxidative activity of phenolics in blue green algae of methanolic extracts

ABSTRACT

One of the factors that affects climate change is high carbon dioxide (CO₂) gas in the atmosphere. Algae needs CO₂, sunlight and water for their growth and can be cultivated in open ponds. Algae have varying proportions of proteins, carbohydrates, fats and antioxidants, which can be used as diet supplements. Phenolics have been shown to exhibit bioactive properties, particular antioxidant effects. A phenolics have been shown to exhibit bioactive properties, particular antioxidant effects. A phenolic rich extract has been isolated from the algae species, *Arthrospira platensis*. The objectives of this study were to determine the total amount of phenolics extracted from methanolic solvent of blue green algae and to evaluate antioxidative activity of phenolics extracted from methanolic solvent of blue green algae and to evaluate antioxidative activity of phenolic extracts in different concentrations of methanolic solvent using free radical scavenging assay. This study began with extraction of the *Arthrospira* with liquid nitrogen into powder after filtration and overnight drying in the oven. This is followed by determination of total phenolics in different concentrations of methanolic solvent and studied for free radical scavenging activity using DPPH assay. The concentrations of total phenolics determined by the folin-ciocalteu method was found to be 252.72 mg/L GAE in aqueous extracts which showed that phenolics compounds can dissolve more in water medium. The radical scavenging activity of the extracts determined using 2,2-diphenyl-picrylhydrazyl radical (DPPH) as free radical indicated that phenolic in methanolic extracts exhibit hydrogen donating capacity. The 100% methanolic extracts showed significantly higher antioxidative activities in all assays while in different concentrations of 100% methanolic extracts, the concentration of 120 mg/L showed the highest free radical scavenging activity. The high scavenging activity of *Arthrospira platensis* may be due to hydroxyl groups existing in the radical scavenger. This study showed that blue-green algae is rich in phenolic compounds which are natural antioxidants and may help reduce the problem of climate change by absorption of CO₂ from the atmosphere.

Keyword: Antioxidant; Antioxidative activity; Free radical; Phenolic; algae; *Arthrospira platensis*