Assessment of Phenolic Components of the microalgae *Spirulina platensis* using two methods of Chromatography, TLC and HPLC

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Abstract

Spirulina platensis is a blue-green microalga with high level of bioactive compounds and high protein content. This study aimed to evaluate the presence and types of phenolic compounds as well as ascorbic acid using two methods of Chromatography, TLC and HPLC in *Spirulina*. In this study, total phenolic compounds were measured by spectrophotometric method. Then, the presence of 14 phenolic compounds and the percentage of these compounds in total phenolic compounds were investigated using thin layer chromatography (TLC) and high-performance liquid chromatography (HPLC). The results showed that the use of water as a solvent increased significantly the amount of phenolic compound extracted compare the use of methanol. Total phenol content in aqueous extract was 150.5 ± 0.41 mg and methanolic extract was 32.8 ± 0.47 mg equivalent to Gallic acid in gram of *Spirulina*. The presence of 10 phenolic compounds of 14 standard phenolic compounds; Curcumin, Ascorbic acid, Tannic acid, Salicylic acid, Ellagic acid, Gallic acid, Catechin, Quercetin, Vanillin, and Benzoic acid was confirmed in *Spirulina*. The highest amount of existing phenolic compound was related to curcumin with 30%; as well as, the presence of ascorbic acid was confirmed as 20.3%. The presence of high levels of phenolic compounds, particularly the high percentage of curcumin and ascorbic acid as strong antioxidants in *Spirulina*, increases the nutritional value of this microalgae, which has been introduced by the USA Food and Drug Administration as a superfood.

Keywords: Microalgae, *Spirulina*, Phenolic compounds, TLC, HPLC.