

Antioxidant and antidiabetic activities of some algal species

Omnia Abdel-Karim, Atef Abo-Shady, Saly Gheda and Gehan Ismail

Department of Botany and Microbiology, Faculty of Science, Tanta University, Tanta, Egypt

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Background: Algae are known to have active ingredients that have anti-oxidant activities that might have biological importance. **Aim:** Antioxidant and antidiabetic activities of some algal species. **Materials and Methods:** In this study different crude extracts of two microalgae *Spirulina platensis*, *Chlorella vulgaris* and six seaweeds *Turbinaria decurrens*, *Padina pavonica*, *Sargassum muticum* and *Sargassum acinarium*; *Ulva lactuca* as well as *Pterocladia capillacea* were tested to evaluate their antioxidant properties and in vitro antidiabetic potential on α -amylase and α -glucosidase enzymes. **Results:** The phytochemical screening of these extracts showed the presence of bioactive compounds that responsible for the antioxidant and antidiabetic activities. In addition, all analyzed extracts exhibited antioxidant activity using DPPH, reducing power and total antioxidant capacity assays in addition to antidiabetic activity. Among these extracts, *S. platensis* methanolic extract and *T. decurrens* acetone extract exhibited the highest antioxidant activity and inhibitory effects on α -amylase and α -glucosidase; which was related with its total phenolic content. Both extracts showed no toxicity on normal cell lines using MTT assay. GC-MS analysis of the *S. platensis* ME and the *T. decurrens* AE revealed the presence of different bioactive compounds. Concerning the in vivo study, both *S. platensis* ME and *T. decurrens* AE at different doses caused anti-hyperglycaemic activity by reducing the blood glucose level. A remarkable decrease in different liver and kidney functions and hyperlipidemia related to diabetes. The algal extracts treatment also showed enhancement of body weight loss and improvement of the total protein, albumin and hemoglobin levels. Furthermore, treatment of diabetic rats with the extracts caused improvement of the histopathological changes of the liver and pancreas tissues related to diabetes. **Conclusion:** The investigated compounds may be acted synergistically and responsible for its antioxidant and antidiabetic activities.

Keywords: Algae; Antioxidant; Antidiabetic; Gas Chromatography; Mass Spectroscopy; Phytochemical

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