

## Abstract

The genus *Dictyota* is a large group of marine brown macroalgae that grow especially in temperate and tropical waters. The very wide morphological diversity in the members of this genus makes species determination based on morphological or anatomical features complicated. In the present study we examined the diversity of *Dictyota* species and related genera of the family Dictyotaceae in the Persian Gulf and Oman Sea in southern coast of Iran. To investigate the diversity of *Dictyota* and related genera in this region, we used DNA sequencing data from the *rbcL* and *psbA* as the chloroplast genes and the *cox3* as mitochondrial gene along with morphologic information such as thallus length, margin indentation, branching angle, distance of inter dichotomies, apical shape, number of layers of medulla and size of cells in cortex and medulla. Based on the present study, the presence of *Dictyota ciliolata*, *Canistrocarpus cervicornis*, and *Stoechospermum polypodioides* was confirmed which previously has been reported based on traditional classification from the southern Iranian coastlines of the Persian Gulf and Oman sea. Two new records including *Dictyota acutiloba* and *Spatoglossum crassum* have been reported for the south of Iran in this study. Also *Dictyota pulvinata* sp. nov. has introduced for the first time as a new species to the Dictyotaceae family from the coastal waters the Persian Gulf in south of Iran. Pillow growth habit and anastomosing blades are the diagnostic features of *Dictyota pulvinata* sp. nov. The phytochemical analyses of the studied species were also carried out to determine and compare the nutritional value of Dictyotaceae species in the southern coast of Iran. The results showed that the studied species had relatively high lipids (4.25 to 8.42% of dry weight) and protein (5.18 to 12.65% of dry weight) of algae. Fatty acids profiles also confirmed the presence of high levels of unsaturated fatty acids, including oleic acid, linolenic acid, arachidonic acid, as well as the presence of EPA and DHA fatty acids. Phenol and flavonoid contents of the studied species were (6.38 to 11.96 mg GAE g<sup>-1</sup> d.w. and 13.98 to 35.18 mg QE g<sup>-1</sup> d.w., respectively). The results of this study demonstrate the potential of each examined species of Dictyotaceae as a source for human nutrition, nutritional supplement, pharmaceutical applications, food industry and cosmetics application.

Keywords: Dictyotaceae, Molecular phylogeny, New species, Fatty acids, Persian Gulf



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**Molecular phylogeny and fatty acids evaluation in species of  
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