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Novel Record of *Ulva* sp. Identified from Barbarian Reef, Beruwala of Sri Lanka

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Abstract

Marine macroalgae is a promising resource with a diverse range of industrial applications. In Sri Lanka, only a limited number of studies have been conducted to study the morphological plasticity and cryptic diversity of marine macroalgae and the molecular data available is still scarce. This study provides evidence for a newly identified *Ulva* sp. collected from Barbarian reef, Beruwala, Sri Lanka. Specimen collection was carried out in September 2018 from the Barbarian reef, Beruwala and it was analysed based on morphological characters and rDNA ITS1-5.8S-ITS2 sequences. The specimen of interest was identified to the species level as *Ulva lactuca* based on the morphological characterisation. Universal primers were used for the amplification of rDNA ITS1-5.8S-ITS2 region from the same specimen and DNAsequencing was carried out using the Sanger sequencing method. Sequence alignment with the NCBI database showed a 99% sequence similarity to *Ulva ohnoi* (Accession number-KF195514.1) while *Ulva lactuca* was not shown in the BLAST results. According to the fact that, 93% sequence similarity should be achieved with that of the Gene bank sequences for the species level determination of algae using the rDNA ITS1-5.8S-ITS2 sequence due to the compensatory base changes in nuclear ITS2 secondary structures, the specimen of interest could be confirmed as *Ulva ohnoi* since it shows a 99% sequence identity. According to the phylogenetic analysis carried out using the Mega X software, maximum Likelihood method and Kimura 2-parameter model, *Ulva ohnoi* voucher PR4 (KF195514.1) isolated from Australia are closely related to the specimen of interest (MK910759.1) with a 94% bootstrap support. Morphological identification provides a significant limitation in developing a universal, rather than a restrictive taxonomy of algae. This study marks the significance of utilising molecular tools in determining the identification of organisms irrespective of the environmental effects or convergent evolution. Molecular data identifies the cryptic diversity of seaweeds with identical morphologies to be grouped into different taxa based on genetic information.

Keywords: Algae, *Ulva lactuca*, *Ulva ohnoi***,** Beruwala, rDNA-ITS