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Genetic Diversity of *Ostreopsis ovata* (Dinophyceae) from Malaysia

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Abstract: The genus *Ostreopsis* is an important component of benthic and epiphytic dinoflagellate assemblages in coral reefs and seaweed beds of Malaysia. Members of the species may produce toxins that contribute to ciguatera fish poisoning. In this study, two species have been isolated and cultured, *Ostreopsis ovata* and *Ostreopsis lenticularis.* Analyses of the 5.8S subunit and internal transcribed spacer regions ITS1 and ITS2 of the ribosomal RNA gene sequences of these two species showed that they are separate species, consistent with morphological designations. The nucleotide sequences of the 5.8S subunit and ITS1 and ITS2 regions of the rRNA gene were also used to evaluate the interpopulation and intrapopulation genetic diversity of *O. ovata* found in Malaysian waters. Results showed a low level of sequence divergence within populations. At the interpopulation level, the rRNA gene sequence distinguished two groups of genetically distinct strains, representative of a Malacca Straits group (isolates from Port Dickson) and a South China Sea group (isolates from Pulau Redang and Kota Kinabalu). Part of the sequences in the ITS regions may be useful in the design of oligonucleotide probes specific for each group. Results from this study show that the ITS regions can be used as genetic markers for taxonomic, biogeographic, and fine-scale population studies of this species.

Key words: *Ostreopsis ovata,* benthic dinoflagellates, genetic diversity, rRNA, HAB species, Malaysia.

INTRODUCTION

Benthic and epiphytic dinoflagellates are important components of microalgal assemblages in tropical and subtropical waters. Certain species in this group of dinoflagellates are known to produce several potent toxins that may be involved in ciguatera fish poisoning. The occurrence of this group of dinoflagellates in Malaysian waters has never been formally documented. Samplings that we have carried out, however, show that they are common in seaweed beds and coral reefs in various parts of Malaysia (unpublished data). These include species of *Gambierdiscus, Ostreopsis, Coolia, Prorocentrum,* and *Amphidinium.* Through these sampling efforts we know that at least two species of *Ostreopsis* exist in Malaysian waters, *Ostreopsis lenticularis* and *Ostreopsis ovata.*

The benthic/epiphytic dinoflagellates have limited capabilities for dispersal. They are rarely encountered in the plankton. Dispersal might occur via rafting on pieces of seaweed that become detached from the substratum. The limited dispersal capability means that the probability of genetic exchange between widely separated populations of

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