

Alexandrium (Dinophyceae) species in Malaysian waters

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Abstract

A study was carried out to determine the presence of paralytic shellfish poisoning (PSP) toxin-producing dinoflagellates in the coastal waters of Peninsula Malaysia. This followed first ever occurrences of PSP in the Straits of Malacca and the northeast coast of the peninsula. The toxic tropical dinoflagellate *Pyrodinium bahamense* var. *compressum* was never encountered in any of the plankton samples. On the other hand, five species of *Alexandrium* were found. They were *Alexandrium affine*, *Alexandrium leei*, *Alexandrium minutum*, *Alexandrium tamarense* and *Alexandrium tamiyavanichii*. Not all species were present at all sites. *A. tamiyavanichii* was present only in the central to southern parts of the Straits of Malacca. *A. tamarense* was found in the northern part of the straits, while *A. minutum* was only found in samples from the northeast coast of the peninsula. *A. leei* and *A. affine* were found in both the north and south of the straits. Cultured isolates of *A. minutum* and *A. tamiyavanichii* were proven toxic by the receptor binding assay for PSP toxins but *A. tamarense* clones were not toxic. Mean toxin content for the *A. tamiyavanichii* and *A. minutum* clones were 26 and 15 fmol per cell STX equivalent, respectively. This study has provided evidence on the presence of PSP toxin-producing *Alexandrium* species in Malaysian waters which suggests that PSP could increase in importance in the future.

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1. Introduction

Malaysia is one of many countries affected by harmful algal blooms (HABs) and associated seafood poisoning. Currently, paralytic shellfish poisoning (PSP) is the only HAB-related shellfish poisoning that has been documented in the country. Until 1990, PSP was confined to the west coast of Sabah, where the dinoflagellate *Pyrodinium bahamense* Plate var. *compressum* Böhm form blooms almost annually. This

species has long been considered the most important PSP toxin-producing species in southeast Asia (Malaysia and The Philippines) and along the Pacific coastline of central America (Rosales-Loessener et al., 1989; Orellana-Cepeda et al., 1998; Usup and Azanza, 1998). In Malaysia alone, *P. bahamense* has caused many poisoning events including several fatalities.

In early 1991, PSP occurred for the first time outside Sabah. Three people were poisoned after consuming mussels from a mussel farm in Sebatu in the Straits of Malacca. Naturally *P. bahamense* was suspected to be the toxin producer, but to date the species has never been found in plankton samples collected from several locations in the Straits of Malacca. In the

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