

Contribution: Onsite oral

Thematic Session:

1st choice: Ichthyotoxic HABs

2nd choice: Biology and Biogeography

3rd choice: Taxonomy

Morphology, molecular phylogeny, and ichthyotoxicity of naked dinophytes *Karlodinium* species from Malaysia

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Abstract

Genus *Karlodinium* is one of the naked dinophytes that caused fish kill events worldwide. In 2014-2015, blooms of *K. australe* have been reported to cause massive fish mortality in the Johor Strait, severely impacting the aquaculture industries of Malaysia and Singapore. These events have risen the concern to further investigate the species diversity and ichthyotoxicity of *Karlodinium* in Malaysian waters. Clonal cultures of *Karlodinium* were established and identified based on detailed morphological observations and molecular analysis. A total of eight species of *Karlodinium* were identified: *K. armiger*, *K. australe*, *K. azanzae*, *K. ballantinum*, *K. decipiens*, *K. gentienii*, *K. veneficum*, and *K. zhouanum*. The species identity of *Karlodinium* was further supported by the molecular phylogenetic inferences of internal transcribed spacer (ITS) and large-subunit (LSU) ribosomal DNA markers. Results of *Artemia* bioassay showed that *K. australe*, *K. veneficum*, and *K. ballantinum* caused mortality of *Artemia*. While fish assay showed that *K. australe* is highly ichthyotoxic. This study demonstrates, for the first time, a high diversity of *Karlodinium* species from Malaysia.