Marine epibenthic dinoflagellates from Malaysia - a study of five cultures and preserved samples based on light and scanning electron microscopy

Abstract

Marine epibenthic dinoflagellates have been collected from macroalgae, dead corals, seagrasses and sand in Malaysia and identified using light microscopy, including epifluorescence microscopy, and scanning electron microscopy. Examination of 62 samples revealed that Malaysia has rich diversity of benthic dinoflagellates, with 24 species representing 9 genera. Of these species, 8 were shown to be potentially toxic using the Artemia bioassay test i.e. Prorocentrum arenarium, P lima, P concavum, P. cf. faustiae, Gambierdiscus pacificus, Ostreopsis labens, O. ovata and Coolia sp. The diversity of potentially toxic species in Malaysian waters indicates that Malaysia may encounter problems with ciguatera and/or DSP. The highest species diversity was found at Sipadan Island with a total of 18 species identified. One of these is previously undescribed (Prorocentrum sipadanensis sp. nov.). The most common species identified at all sampling sites were Prorocentrum lima and Ostreopsis ovata. Generally, the morphology of the species identified from Malaysian waters,is similar to that reported in studies elsewhere. However, new features were also observed (e.g. a pyrenoid in Prorocentrum emarginatum and two different-sized pores in Ostreopsis labens). The importance of SEM as a tool in taxonomic studies is stressed.