

Variation of the abundance and composition of dinoflagellates in three sea bathing sites in the Western and Southern coasts of Sri Lanka

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Dinoflagellates are an important group of phytoplankton which inhabit both marine and freshwater environments. Marine dinoflagellates are well known for producing toxins. In the present study, the abundance and composition of marine dinoflagellates in the coastal waters of Mount Lavinia, Unawatuna and Polhena were investigated during August to December, 2016 in relation to nitrite, nitrate, phosphate and silicate concentrations. Replicate water samples (10 L) (n = 5 for Mount Lavinia and Unawatuna; n=3 for Polhena) were collected from each site and filtered through a 10 µm mesh. The plankton retaining on the mesh were collected and preserved with Lugol's solution, identified using standard keys and counted under the light microscope. In addition, nitrate, nitrite, phosphate and silicate concentrations of water in each site were determined by colorimetric method while the total suspended solids (TSS) were determined by a gravimetric method. Results revealed that dinoflagellates contributed to 6.30% of the total phytoplankton community. Altogether 36 species of dinoflagellates belonging to 12 genera were identified. Of these, 16 species were identified as toxic species belonging to the genera *Alexandrium*, *Akashiwo*, *Dinophysis*, *Noctiluca*, *Prorocentrum*, *Proto-peridinium* and *Scrippsiella*. *Prorocentrum lima* was the dominant toxic dinoflagellate species followed by *Scrippsiella trochoidea*. Temporally significant toxic dinoflagellate abundances were reported in September (68 cells/L) and November (60 cells/L) while spatially significant toxic dinoflagellate abundance was reported at Polhena (58 cells/L) ($p < 0.05$; Two-way ANOVA). The dinoflagellate abundances were positively correlated ($p < 0.01$) with silicate concentration in water. The low density of dinoflagellates and toxic species suggest a less possibility of algal blooms. The detailed studies should be conducted to identify and distribution of toxic dinoflagellates to establish safe sites for bathing and recreational activities.

Keywords: dinoflagellates, Mount Lavinia, Polhena, sea bathing sites, Unawatuna

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