

Determination of natural organic Fe (III) binding ligand at Pulau Perhentian

ABSTRACT

The organic ligands concentrations [FeL] ranged between 432.8-900.6 nM and showed conditional stability constants ($\log K'$) between 22.68 and 24.63 in the surface waters of the Pulau Perhentian. Dissolved Fe was therefore largely complexed by organic ligands (100%). The organic ligand concentrations ([FeL]) were always in excess of [dFe] throughout the water column. The ligands are thought to play an important role in keeping Fe in solution and hence regulating Fe availability to organisms. The ratio of [FeL]/[dFe] was used to analyse trends in Fe speciation observed during this study. An enhanced and variable FeL]/[dFe] ratio (1.0-1.2) was determined throughout the water column. These observations indicate the importance of phytoplankton in maintaining the ratio by Fe uptake and ligand production. This observation indicates that the Fe binding ligand sites become occupied and even almost saturated at the study area.

Keyword: Dissolved Fe; Organic ligands; Fe speciation; Log K; Pulau Perhentian