



The role of the picoeukaryote *Aureococcus anophagefferens* in cycling of marine high-molecular weight dissolved organic nitrogen

Berg, Gry Mine, Daniel J. Repeta, Julie LaRoche

Limnol. Oceanogr., 48(5), 2003, 1825-1830 | DOI: 10.4319/lo.2003.48.5.1825

ABSTRACT: Environmental evidence suggests that *Aureococcus anophagefferens* (Pelagophyceae), a eukaryotic picoplankton that blooms in coastal seawaters, can outcompete other organisms because of its ability to use abundant dissolved organic nitrogen (DON). To test this hypothesis, we isolated *A. anophagefferens* in axenic culture and monitored its growth on high-molecular weight (HMW) DON collected from sediment pore waters, a putative source for DON in bays where blooms occur. HMW DON originating from pore water had a substantially higher protein content than surface seawater DON. We found that *A. anophagefferens* could deplete 25-36% of the available nitrogen in cultures with HMW DON as the sole source of nitrogen and that this corresponded well with the protein fraction in pore-water HMW DON. High rates of cell surface peptide hydrolysis and no detectable N-acetyl polysaccharide hydrolysis, together with the high percentage of hydrolyzable amino acids compared to hydrolyzable aminosugars present in the HMW DON, pointed to the protein fraction as the more likely source of nitrogen used for growth. Whether or not nitrogen scavenging from protein is a common mechanism in phytoplankton is at present unknown but needs to be investigated.

Article Links

[Download Full-text PDF](#)

[Return to Table of Contents](#)

Please Note

Articles in L&O appear in PDF format. Open access articles may be freely downloaded by anyone. Other articles are available for download to subscribers only, or may be purchased for \$10 per article. All L&O articles are moved into Open Access after three years.