



Natural isotopic composition of carbon ($\delta^{13}\text{C}$) correlates with colony size in the planktonic cyanobacterium *Gloeotrichia echinulata*

Vuorio, Kristiina, Markus Meili, Jouko Sarvala

Limnol. Oceanogr., 54(3), 2009, 925-929 | DOI: 10.4319/lo.2009.54.3.0925

ABSTRACT: To assess variability in carbon isotope signatures ($\delta^{13}\text{C}$) between and within populations under natural conditions, with a particular emphasis on colony size, we repeatedly collected planktonic colonies of a freshwater cyanobacterium *Gloeotrichia echinulata* in two lakes, Pyhäjärvi (southwest Finland) and Erken (southeast Sweden). Despite substantial differences in the average $\delta^{13}\text{C}$ signature of *Gloeotrichia* between lakes (-6.9‰ in Pyhäjärvi and -20.7‰ in Erken), a similar, systematic increase in $\delta^{13}\text{C}$ with colony size was observed in both lakes (of 2-3‰ in Pyhäjärvi and 3-5‰ in Erken). This suggests declining isotope fractionation with increasing colony size, probably related to diffusion limitation of carbon availability. Temporal variation explained a minor fraction of total subsample variability (range $\delta^{13}\text{C}$ ~4‰ in Pyhäjärvi and ~6‰ in Erken). Isotopic ^{13}C fractionation in *Gloeotrichia* was likely affected both by carbon source and by colony size.

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.