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Effect of elevated nitrate concentration on calcification of Emiliania huxleyi

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It is known that the percentage of aberrant coccoliths in cultures is higher than in natural samples, which makes extrapolating laboratory-based results of calcium carbonate production and coccolith morphology to the natural environment difficult. The reason for the hampered morphogenesis of coccoliths in cultured specimens is still unknown. In 14C uptake experiments using Emiliania huxleyi it was shown that calcification rate decreases under a nitrate concentration of 1000 micromol per liter. Therefore, we studied growth rate, calcification rate, particulate organic carbon production, and the ratio of aberrant coccoliths to normal coccoliths in a culture of Emiliania huxleyi (PML92/11) grown in natural seawater under varying nitrate concentrations from 10 to 890 micromol per liter. None of these parameters showed a trend over the range of nitrate concentrations tested. We conclude that high nitrate concentrations do not affect morphogenesis of coccoliths and calcification rate in Emiliania huxleyi (PML92/11).