

Contrasted population growth among three phototrophic protist strains under suspended solid stress conditions

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Abstract

Three protist strains were grown under suspended solid stress conditions (0, 31.25, 62.5, 125, 250, 500, 1000, and 2000 mg SS L⁻¹). Quadruplicate cultures in 500 ml-PC bottles were subsampled to measure chlorophyll fluorescence every 24 hrs. A total of 32 culture bottles (quadruplicate bottles for 8 SS concentrations) were prepared and incubated at 20°C, 30 psu under 50 $\mu\text{E m}^{-2}\text{s}^{-1}$ using rotating wheels (4 rpm) for each of the 3 test strains, a cryptomonad, a diatom *Skeletonema* sp. and a dinoflagellate *Prorocentrum minimum*. In all the three test strains, population size steadily increased at least during the first 3 days regardless of the SS concentrations in the culture media, followed by retarded growth (a cryptomonad and *Prorocentrum minimum*) or population decline (*Skeletonema* sp.). Mean daily growth rates during the first 3 d along the SS concentration gradient were compared within each strain as well as among the strains. *Skeletonema* sp. and a cryptomonad exhibited positively related growth rate with SS concentrations while *P. minimum* did negatively. Present result implies that the increased SS concentration may sometimes stimulate population growth of non-flagellated or nano-flagellate protists in contrasts to the case of dinoflagellates. Extended speculation might open an early discussion on the potentially negative effect of the increased SS concentrations on red-tide dinoflagellate species.

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