Study examines the effects of ocean acidification on phytoplankton's energy stores

January 6 2022

Credit: Pixabay/CC0 Public Domain

Ocean acidification—which is mainly caused by carbon dioxide gas in the atmosphere dissolving into the ocean—is a significant threat to the

structure and function of marine life. In a study published in the *New Phytologist*, investigators have uncovered the different effects that ocean acidification has on the energy stores of phytoplankton (single-celled plants that are critical to the aquatic food chain) called diatoms.

The work focused on diatoms from a natural Antarctic phytoplankton community exposed to a gradient of carbon dioxide levels. Certain diatoms showed preferences towards proteins at high carbon dioxide levels, while others increased both lipid and protein stores.

Studying these adaptations to carbon dioxide levels may reveal how phytoplankton responses to climate change could have cascading effects on food web dynamics in the world's oceans.

"To date, we know little about how ocean acidification will affect the nutritional value of phytoplankton. Our study showed that diatom species exposed to acidified conditions change the way they store excess energy in unique ways," said senior author Katherina Petrou, Ph.D., Associate Professor at the University of Technology Sydney. "Our work suggests that ocean acidification will influence the type of energy available at the base of the food web, which ultimately could affect the productivity of our marine ecosystems."

More information: Rebecca J. Duncan et al, Ocean acidification alters the nutritional value of Antarctic diatoms, *New Phytologist* (2022). DOI: 10.1111/nph.17868

Provided by Wiley

acidification-phytoplankton-energy.html