402

IMPACT OF TEMPERATURE ON UV-SUSCEPTIBILITY OF TWO SPECIES OF ULVACEAE FROM ANTARCTIC AND SUBANTARCTIC REGIONS

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Enhanced UV-radiation and increased temperatures represent two symptoms of climate change likely to affect polar coastal ecosystems. There, macroalgae are key components as they provide food and shelter for a multitude of associated organisms. In our study the interactive effects of UV-B-exposure and increased temperature were investigated in the two green macroalgae *Ulva bulbosa* and *Ulva clathrata*. At seawater temperatures of 0 °C, UV-induced inhibition of photosynthesis measured by chlorophyll fluorescence was stronger pronounced in *U. clathrata* from Southern Chile than in the Antarctic strain of *U. bulbosa*, whereas temperatures of 10 °C compensated UV-effects in both species. This evidence suggests a higher UV-susceptibility of *U. clathrata* than *U. bulbosa* at 0 °C. Despite the pronounced UV-induced photoinhibition, damage to D1 protein in photosystem II could not be detected. In addition, marked changes in the activity of the oxygen radical scavenging superoxide dismutase (SOD) and content of malondialdehyde were absent under UV-exposure in both species, indicating the absence of oxidative stress. However, under all treatments, SOD activity was significantly higher in *U. bulbosa* than in *U. clathrata*. Altogether, data indicate a higher degree of cold-adaptation and a higher UV-tolerance of *U. bulbosa,* enabling the latter species to thrive under Antarctic conditions.