The Relationship Between Fe Availability and the Capacity of CO2 Sequestration by Tretaselmis chuii

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The role of iron (Fe) in marine ecosystems was proved an active element for the biogeochemical balance of the ocean's euphotic zone. However, such studies have been preferentially conducted in meso- and macro- scales, even though minor scale experiments rigorously reflect the processes ocurring in situ, without the inconvenience of obtaining non-specific results or unpredictable aftereffects. Thus, we have applied such method to comprehend the marine microalgae Tretaselmis chuii's response to environments with different Fe concentrations. The species was cultivated for 28 days in three experimental assays (n=3/group): group I (medium F/2 used as the control), group II (F/2 enriched with double the amount of iron) and group III (F/2 enriched with four times the amount of iron). The calculation of dry weight allowed to determine the algal biomass (g/L) and to acquire an indirect measure of the harvested inorganic carbon (g/L). Compared to group I (biomass of 1,7 ± 0,58; 0,85 of C), group II (biomass of 2,6 ± 0,58; 1,3 of C) and notledly group III (biomass of 4,0 ± 1,0; 2,0 of C) exhibit a much greater biomass production and carbon sequestration. An ANOVA proved the results statistically significant (p = 0,024003). The present study demonstrated a larger algal growth in cultures exposed to greater Fe availability, thus concluding that CO2 sequestration is enhanced using increasing iron concentrations up to 1,38 × 10-4 mol/L. Further research ought to compreend the influence of such practice on other algal species proliferation, namely regarding harmful algal blooms (HABs).

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