pH Effect on growth mechanism of *Nannochloropsis Oculata* in the study of CO_2 capture process:

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ABSTRACT

As the greenhouse gases are the major environmental concern worldwide and scientist consider these gases responsible for global warming. CO_2 is a major constituent, produced by burning fossil fuel worldwide, lot of research is being done for the CO_2 mitigation purpose to preserve planet environment. Trends are shifting towards renewable energy sources in order to minimize CO_2 emission. Biological CO_2 capture methods using photo-bioreactors by growing microalgae, which is potential technology being explored worldwide due to its advantage of CO_2 capture and biofuel production as well. As in the Middle East countries especially in Saudi Arabia region has large power plants as CO_2 source and wastewater as nutrients source for microalgae growth and higher solar irradiations as extra benefit for photosynthesis. In this work with the purpose of CO_2 reduction, *Nannochloropsis Oculata* was cultured in batch photo-bioreactor with CO_2 concentrations of 2%, 4%, 6%, 8%, 10% and 12% mixed with air to study the pH effect on growth kinetics, biomass productivity and CO_2 reduction with the change in CO_2/Air feed composition. Results shows, pH is the crucial factor for *Nannochloropsis Oculata* culture process which is directly related to CO_2 feed composition and growth media. The results of this study will be helpful to define optimum operating parameters for culture developing of *Nannochloropsis Oculata* with maximum CO_2 utilization and biomass production which will contribute towards reduction of environmental concerns caused by CO_2.

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