

## Dual Role of Microalgae: Carbon Dioxide Capture Nutrients Removal

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**Abstract :** This study evaluated the use of mixed indigenous microalgae (MIMA) as a treatment process for wastewaters and CO<sub>2</sub> capturing technology at different temperatures. The study follows the growth rate of MIMA, removals of organic matter, removal of nutrients from synthetic wastewater and its effectiveness as CO<sub>2</sub> capturing technology from flue gas. A noticeable difference between the growth patterns of MIMA was observed at different CO<sub>2</sub> and different operational temperatures. MIMA showed the highest growth rate when injected with CO<sub>2</sub> dosage of 10% and limited growth was observed for the systems injected with 5% and 15 % of CO<sub>2</sub> at 30 °C. Ammonia and phosphorus removals for Spirulina were 69%, 75%, and 83%, and 20%, 45%, and 75% for the media injected with 0, 5 and 10% CO<sub>2</sub>. The results of this study show that simple and cost-effective microalgae-based wastewater treatment systems can be successfully employed at different temperatures as a successful CO<sub>2</sub> capturing technology even with the small probability of inhibition at high temperatures

**Keywords :** greenhouse, climate change, CO<sub>2</sub> capturing, green algae

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