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## ***Ankistrodesmus* sp.PTT-KMUTT#2101: a promising lipid source for biodiesel production**

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Use of microalgae as a renewable biodiesel feedstock has been received significantly attention recently. Although numerous strains contain the high lipid content, the capability of strains to produce high lipid productivity in mass scale with low production cost is necessary. This work aimed to increase the biomass and lipid productivity of *Ankistrodesmus* sp. PTT-KMUTT#2101 by achieving its ability to consume high CO<sub>2</sub> concentration, a free carbon source. The microalgae was cultivated by aeration with 0.03 (ambient air), 1, 5 and 20% CO<sub>2</sub> using BG-11 with and without Na<sub>2</sub>CO<sub>3</sub> for 7 days. Cell growth increased with the CO<sub>2</sub> concentration. Supply of CO<sub>2</sub> promoted both cell growth and lipid accumulation about 1.6-3.0 fold and 1.7-3.5 fold, respectively compared to that of ambient air. The highest average biomass productivity (280 mg L<sup>-1</sup> d<sup>-1</sup>) and lipid productivity (91 mg L<sup>-1</sup> d<sup>-1</sup>, 32% lipid content, w/w) were obtained from cell grown with 5% CO<sub>2</sub>. We also found that the microalgae could grow and accumulate the lipid in the same manner when replacing Na<sub>2</sub>CO<sub>3</sub> with CO<sub>2</sub>. This result is superior to the use of CO<sub>2</sub> as a sole carbon source to cultivate *Ankistrodesmus* sp. PTT-KMUTT#2101. The lipid types and fatty acid profiles of cell grown in different CO<sub>2</sub> concentrations will be investigated and discussed.

**Keywords:** *Ankistrodesmus*, Microalgae, Biodiesel

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