Effects of light illumination alteration on *Chlorella vulgaris* Buitenzorg's CO₂ fixation in bubble column photobioreactor

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**ABSTRACT**

Cultivation of *Chlorella vulgaris* Buitenzorg with alteration of light illumination using a maximum carbon dioxide transfer rate (CTR<sub>max</sub>) base curve successfully enhanced the CTR value up to 1.74 times compared to alteration of light illumination with a growth base curve. This research produced a CTR average value of 28.6 g/dm<sup>3</sup>·h. A previous research produced a CTR average value of 16.4 g/dm<sup>3</sup>·h. Both cultivations were operated under the follow conditions: *T* = 29 °C, *P* = 1 Atm, *U<sub>G</sub>* = 2.4 m/h, CO₂ = 10%; Beneck medium; 1 dm<sup>3</sup> Bubble Column Photo bioreactor; and illumination source by a Phillip Halogen Lamp 20W /12V/ 50Hz for maximization illumination up to 50 klx. During the cultivation in this research biomass was relatively lower than in the previous research, provided that the light intensity used also narrower than the light intensity range of maximum biomass production.

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