

# Intensity of blue LED light: A potential stimulus for biomass and lipid content in fresh water microalgae *Chlorella vulgaris*

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## Abstract

Light quality and the intensity are key factors which render microalgae as a potential source of biodiesel. In this study the effects of various intensities of blue light and its photoperiods on the growth and lipid content of *Chlorella vulgaris* were investigated by using LED (Light Emitting Diode) in batch culture. *C. vulgaris* was grown for 13 days at three different light intensities (100, 200 and 300  $\mu\text{mol m}^{-2} \text{s}^{-1}$ ). Effect of three different light and dark regimes (12:12, 16:08 and 24:00 h Light:Dark) were investigated for each light intensity at 25 °C culture temperature. Maximum lipid content (23.5%) was obtained due to high efficiency and deep penetration of 200  $\mu\text{mol m}^{-2} \text{s}^{-1}$  of blue light (12:12 L:D) with improved specific growth (1.26  $\text{d}^{-1}$ ) within reduced cultivation time of 8 days. White light could produce 20.9% lipid content in 10 days at 16:08 h L:D.

**Keywords :** *C. vulgaris*; Blue LED intensity; Light and dark regime; Lipid content; Specific growth rate

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