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The Effect of Low Voltage Direct Current Applications on the Growth of Microalgae Chlorella Vulgaris

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Abstract : This study was conducted to explore the effect of direct current (DC) applications on the growth of microalgae Chlorella vulgaris KKU71, isolated from highly saline freshwater. Experiments were implemented based upon the cross-combinations of both the intensity and duration of electric applications, generating a full factorial design of 10V, 20V, 30V, and 5s, 30s, 60s, respectively. Growth parameters of cultures were monitored on Optical Density (OD), Cell Count (CC), Chlorophyll-a, b (Chl-a, b), and Total Carotenoids (TCar). All DC-assisted treatments stimulated the growth and thus led to higher values of growth parameters such as OD, CC, Chl-a, and TCar. Monotonically increasing with the intensity and duration of DC applications, wet and dry biomass yields of the harvested algae reached their highest level at 30V-60s in all sets of treatments. In addition, this increase between DC applications was listed as C(control)<10V<20V<30V and C<5s<30s<60s. As a result, direct current applications increased the biomass.

Keywords : Chlorella Vulgaris, direct current, growth, biomass
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