

PENGARUH CAHAYA MERAH-BIRU DAN PENINGKATAN SALINITAS
TERHADAP KANDUNGAN KARBOHIDRAT DAN LIPID PADA
MIKROALGA *Chlorella zofingiensis* Dönz

Oleh:

Anis Listyarini

11/316119/BI/08725

INTISARI

Selain populer sebagai pakan *Chlorella zofingiensis* Dönz juga memiliki potensi sebagai sumber bahan bakar. Untuk mengetahui potensi *Chlorella zofingiensis* Dönz sebagai sumber *biofuel*, diperlukan peningkatan pertumbuhan sel, kadar karbohidrat dan lipidnya menggunakan cahaya merah-biru dan berbagai salinitas. Oleh karena itu, penelitian ini bertujuan untuk mengetahui pengaruh cahaya merah-biru dan berbagai salinitas medium. *C. zofingiensis* Dönz yang dikulturkan selama 21 hari di laboratorium menggunakan medium campuran pupuk farm pion, ZA dan urea dengan rasio 1: 4: 2. Pertumbuhan kultur setiap 7 hari diukur dari densitas sel dan berat kering. Kadar lipid netral setiap 7 hari diukur dengan metode pewarnaan *Nile Red* dan dianalisis dengan *software CellProfiler*. Sedangkan kadar karbohidrat setiap 7 hari dihitung menggunakan metode Fenol-Sulfat. Kadar karbohidrat dan lipid tertinggi dicapai oleh kultur dengan perlakuan cahaya biru dan salinitas 19 ppm, masing-masing sebesar 301,8 mg L⁻¹ dan 344,6 mg L⁻¹.

Kata Kunci: *Chlorella zofingiensis* Dönz, *biofuel*, karbohidrat, lipid, cahaya merah, cahaya biru, salinitas

THE EFFECT OF RED-BLUE LIGHT AND INCREASING SALINITY ON
CARBOHYDRATE AND LIPID CONTENT IN MICROALGAE *Chlorella*
zofingiensis Dönz

By:

Anis Listyarini

11/316119/BI/08725

ABSTRACT

Chlorella zofingiensis Dönz is popular as feed and also a potential source of biofuel. In order to determine the potential of *Chlorella zofingiensis* Dönz as a source for biofuel, it is necessary to enhance its growth, carbohydrate and lipid content using red-blue light as well as various salinity. Therefore this study was aimed to determine the effect of red-blue light and various salinity of medium. *C. zofingiensis* Dönz was cultured for 21 days in laboratory using a medium of farmpon, ZA and urea with ratio 1: 4: 2. Culture growth was measured by cell density and dry weight every 7 days. Neutral lipid content were measured with *Nile Red* staining method and analyzed with software *CellProfiler* every 7 days. Whereas carbohydrate content was calculated using the phenol-sulfuric every 7 days. The highest levels of carbohydrates and lipids were achieved by culture with blue light and salinity of 19 ppm treatment, which amounted to 301.8 mg L⁻¹ and 344.6 mg L⁻¹ respectively.

Keywords: *Chlorella zofingiensis* Dönz, biofuel, carbohydrate, lipid, red light, blue light, salinity