

**PENGARUH SALINITAS DAN *Skeletonema* sp. SEBAGAI BIOFLOKULAN  
TERHADAP PRODUKSI LIPID, KLOROFIL, DAN KAROTENOID *Euglena*  
sp.**

Oleh  
Herlina Septika Indahsari  
18/429362/BI/10128

**INTISARI**

Pertumbuhan penduduk yang pesat telah meningkatkan kebutuhan energi dunia, sehingga semakin banyak sumber daya yang dibutuhkan. Pengembangan produk berbasis sumber alam terbarukan menggunakan mikroalga air tawar *Euglena* sp. menarik secara komersial karena dapat menghasilkan metabolit bermanfaat dari biomasanya dalam jumlah tinggi yang dapat dimanfaatkan sebagai sumber protein pangan, pewarna alami, bahan dasar kosmetik, dan lain-lain. Budidaya dapat dioptimalkan dengan perlakuan stres oksidatif seperti salinitas yang memiliki peran besar dalam mempertahankan laju metabolisme seluler untuk mengoptimalkan pertumbuhan, meningkatkan produksi lipid, karotenoid, dan klorofil sebagai pigmen pertahanan sel. Biaya pemanenan menjadi salah satu kendala utama dalam produksi biomassa mikroalga. Metode bioflokulasi menggunakan mikroalga flokulan seperti *Skeletonema* sp. saat ini dikenal sebagai teknik pemanenan alternatif untuk menghemat biaya dan energi. Penelitian ini dilakukan untuk mengetahui pengaruh salinitas dan rasio pencampuran pada bioflokulasi terhadap pertumbuhan, produksi lipid, klorofil, serta karotenoid mikroalga campuran *Euglena* sp. dan *Skeletonema* sp. Kultivasi *Euglena* sp. dilakukan dalam medium Cramer-Myers dibawah perlakuan kadar salinitas 5 g/L, 10 g/L, 20 g/L, dan 0 g/L, sementara kultivasi *Skeletonema* sp. dilakukan dalam medium F/2 dengan modifikasi penghilangan silikat. Bioflokulasi dilakukan dengan pencampuran *Euglena* sp. dan *Skeletonema* sp. dengan rasio 1:1, 1:0.5, dan 1:0.25. Hasil penelitian menunjukkan bahwa perlakuan salinitas menyebabkan densitas sel menurun, kadar lipid, klorofil, dan karotenoid meningkat, optimal pada perlakuan salinitas 10 g/L. Semakin besar rasio pencampuran, semakin tinggi daya bioflokulasi. Persentase bioflokulasi didapatkan pada rasio 1:1. Semakin besar rasio pencampuran, semakin tinggi kandungan lipid, semakin rendah kandungan klorofil dan karotenoid sel.

Kata Kunci : *Euglena* sp., *Skeletonema* sp., Salinitas, Bioflokulasi

***EFFECTS OF SALINITY AND *Skeletonema* sp. AS BIOFLOCCULANT ON THE PRODUCTION OF LIPID, CHLOROPHYLL, AND CAROTENOID FROM *Euglena* sp.***

By  
Herlina Septika Indahsari  
18/429362/BI/10128

**ABSTRACT**

Rapid population growth has increased the world's energy needs, so more resources are needed. Product development based on renewable natural resources using freshwater microalgae *Euglena* sp. is commercially attractive because it can produce useful metabolites from its biomass in high quantities which can be used as a source of food protein, natural dyes, cosmetic base ingredients, etc. Cultivation can be optimized by treating oxidative stress such as salinity which has a major role in maintaining the rate of cellular metabolism to optimize growth, increasing the production of lipids, carotenoids, and chlorophyll as cell defense pigments. Harvesting costs are one of the main obstacles in the production of microalgae biomass. The bioflocculation method uses microalgae flocculants such as *Skeletonema* sp. currently known as an alternative harvesting technique to save costs and energy. This research was conducted to determine the effect of salinity and mixing ratio on bioflocculation on growth, production of lipids, chlorophyll, and mixed carotenoids of microalgae *Euglena* sp. and *Skeletonema* sp. Cultivation of *Euglena* sp. carried out in Cramer-Myers medium under treatment with salinity levels of 5 g/L, 10 g/L, 20 g/L, and 0 g/L, while the cultivation of *Skeletonema* sp. carried out in F/2 medium with modified silicate removal. Bioflocculation was carried out by mixing *Euglena* sp. and *Skeletonema* sp. with ratios of 1:1, 1:0.5, and 1:0.25. The results showed that salinity treatment decreased cell density, increased lipid, chlorophyll, and carotenoid levels, optimally at 10 g/L salinity treatment. The larger the mixing ratio, the higher the bioflocculation power. The percentage of bioflocculation was obtained at a ratio of 1:1. The greater the mixing ratio, the higher the lipid content, the lower the chlorophyll and carotenoid content of the cell.

Keywords: *Euglena* sp., *Skeletonema* sp. Salinity, Bioflocculation