

Pengaruh Variasi pH Terhadap Pertumbuhan, Biomassa, Klorofil, Karotenoid, Dan Lipid pada Kultur *Euglena* sp.

**Alfi Dilla Putri
18/423313/BI/09947**

INTISARI

Euglena adalah jenis mikroalga bersel tunggal yang secara alami ditemukan di habitat air tawar eutrofik. Secara umum mikroalga memiliki kandungan metabolit primer seperti lipid yang tinggi dan dapat ditingkatkan dengan memberi cekaman lingkungan salah satunya adalah pH. Peningkatan densitas sel dan biomassa dari perlakuan juga dapat menimbulkan peningkatan kandungan metabolit primer serta metabolit sekunder mikroalga. Penelitian ini dilakukan untuk mengetahui optimalitas kultivasi pada perlakuan variasi pH pada *Euglena* sp. yaitu pada pH kontrol, pH 3,5, pH 5 dan pH 7. Dilakukan pengujian terhadap densitas sel, biomassa, kadar lipid serta kadar klorofil dan karotenoid *Euglena* sp. Densitas sel dihitung sel nya dengan metode *cell count* menggunakan *haemocytometer*. Kadar biomassa didapat dengan metode gravimetri antara berat awal dan berat akhir kultur setelah di sentrifugasi. Kandungan lipid diukur menggunakan metode *Bligh & Dyer*. Sedangkan klorofil karoten diukur absorbansinya dengan metode spektrofotometri. Didapatkan hasil Perlakuan pH yang diberikan masih tergolong dalam pH yang baik untuk pertumbuhan *Euglena* sp. Pengujian mendapatkan hasil yang berbeda nyata dengan nilai signifikansi $<0,05$, kondisi stres pH mempengaruhi pertumbuhan dan kadar metabolit *Euglena* sp. Terjadi peningkatan densitas sel pada pH 3,5 dan peningkatan lipid pada pH 5, hasil total biomassa dan kadar klorofil karotenoid paling baik pada *Euglena* kontrol (pH 4,5).

Kata kunci: *Euglena* sp., Klorofil, Karotenoid, Lipid, Mikroalga, pH

Effect of pH Variations on Growth, Biomass, Chlorophyll, Carotenoids, and Lipids in *Euglena* sp. Cultures

Alfi Dilla Putri
18/423313/BI/09947

ABSTRACT

Euglena is a type of single-celled microalgae that naturally found in eutrophic freshwater habitats. In general, microalgae contain high primary metabolites such as lipids and can be increased by providing environmental stress, one of which is pH. The increase in cell density and biomass from treatment can also cause an increase in the content of primary and secondary metabolites of microalgae. *Euglena* sp. Was cultivated in CM (Cramer-Myers) medium with pH stress treatment of 3,5;5; and 7. Tests were carried out on cell density, biomass, lipid content, and levels of chlorophyll and carotenoids *Euglena* sp. Cell density was calculated by the cell counting method using a Hemocytometer. The biomass content was obtained by the gravimetric method between the initial and final weight of the culture after centrifugation. Lipid levels were measured using the Bligh & Dyer method. The absorbance of chlorophyll and carotenoid was measured by spectrophotometric method. Based on the research result, the pH treatment given was still classified as a good pH for the growth of *Euglena* sp. Tests get significantly different results with a significance value <0.05 , it shows that pH stress conditions affected the growth and metabolite levels of *Euglena* sp. There was an increase in cell density at pH 3.5 and an increase in lipids at pH 5, the results of total biomass and carotenoid chlorophyll content were the best in *Euglena* control (pH 4.5).

Keywords: Chlorophyll, Carotenoid, *Euglena* sp., Lipid, Microalgae, pH.