

## **PENGARUH AIR LIMBAH TAMBAK UDANG TERHADAP PERTUMBUHAN, LIPID, PROTEIN, KARBOHIDRAT DAN PIGMEN *Euglena* sp.**

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### **INTISARI**

Budidaya udang vaname di tambak dilakukan semakin intensif menyebabkan peningkatan limbah yang dihasilkan. Tambak udang vaname masih banyak mengalirkan limbah ke aliran air secara langsung. Tingginya kandungan limbah ini menyebabkan permasalahan bagi lingkungan perairan. Limbah tambak udang mengandung senyawa-senyawa nutrisi terutama nitrogen dan fosfor dalam jumlah tinggi dimana memiliki potensi sebagai medium kultur mikroalga *Euglena* sp. Mikroalga *Euglena* sp. merupakan mikroalga uniselular fotosintetik yang dapat menghasilkan berbagai metabolit seperti lipid, protein, karbohidrat dan pigmen. Tujuan penelitian ini adalah untuk mengetahui pengaruh penambahan air limbah tambak udang terhadap pertumbuhan, lipid, protein karbohidrat dan pigmen *Euglena* sp. Pada penelitian ini dilakukan penambahan air limbah tambak udang dengan konsentrasi yang beragam (0%, 10%, 30% dan 50%) untuk optimasi produksi metabolit lipid, protein, karbohidrat dan pigmen *Euglena* sp. parameter yang diamati yaitu jumlah sel, biomassa sel, kadar karbohidrat, kadar protein, dan kadar lipid. Data kuantitatif dianalisis menggunakan *One-Way* ANOVA. Hasil dari penelitian ini menunjukkan jumlah densitas sel terbanyak diperoleh  $45.6 \times 10^5$  sel/mL, *specific growth rate*  $0.335 \pm 0.075$   $\mu$ /hari, *doubling time*  $2.154 \pm 0.551$  setiap harinya, biomassa 0.302 mg/mL, lipid  $0.256 \pm 0.050$  mg/mL, karbohidrat  $1.103 \pm 0.011$  mg/mL, protein  $0.02995 \pm 0.00001$   $\mu$ /mL, klorofil a  $2.578 \pm 0.102$   $\mu$ g/mL, klorofil b  $3.246 \pm 0.129$   $\mu$ g/mL dan karotenoid  $1.078 \pm 0.013$   $\mu$ g/mL. Karakteristik asam lemak tertinggi terdapat pada Methyl cis-11-eicosenoate (MUFA) dengan nilai relatif 17, 58%, Methyl linoleate dengan nilai 15,82 (PUFA) dan Methyl palmitate (SFA) dengan nilai relatif 15,75%.

**Kata kunci:** Air limbah tambak udang, *Euglena* sp., metabolit primer, pigmen.

**THE EFFECT OF SHRIMP AQUACULTURE WASTEWATER  
ON THE GROWTH, PRIMARY METABOLITES  
AND PIGMENT *Euglena* sp.**

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**ABSTRACT**

Vanname shrimp cultivation in ponds is being carried out more intensively, causing an increase in the waste produced. Many vaname shrimp ponds still channel waste directly into waterways. The high content of this waste causes problems for the aquatic environment. Shrimp pond waste contains high amounts of nutrient compounds, especially nitrogen and phosphorus, which has potential as a culture medium for the microalgae *Euglena* sp. Microalgae *Euglena* sp. is a photosynthetic unicellular microalgae that can produce various metabolites such as lipids, proteins, carbohydrates and pigments. The aim of this research was to determine the effect of adding shrimp pond wastewater on growth, lipids, protein carbohydrates and pigments of *Euglena* sp. In this research, shrimp pond wastewater was added with various concentrations (0%, 10%, 30%, and 50%) to optimize the production of lipid, protein, carbohydrate and *Euglena* sp pigment metabolites. The parameters observed were the number of cells, cell biomass, lipid content, protein content, carbohydrate and lipid content. Quantitative data were analyzed using One-Way ANOVA. The resultsof this study showed that the highest cell density was obtained  $45.6 \times 10^5$  cells/mL, *specific growth rate*  $0.335 \pm 0.075$   $\mu$ /hari, *doubling time*  $2.154 \pm 0.551$  every day, biomass  $0.302 \pm 0.020$  mg/mL, lipid  $0.256 \pm 0.050$  mg/mL, carbohydrate  $1.103 \pm 0.011$  mg/mL, protein  $0.02995 \pm 0.00001$   $\mu$ /mL, chlorophyll a  $2.578 \pm 0.102$   $\mu$ g/mL, chlorophyll b  $3.246 \pm 0.129$   $\mu$ g/mL and carotenoid  $1.078 \pm 0.013$   $\mu$ g/mL. The highest fatty acid methyl ester characteristics are found in Methyl cis-11-eicosenoate (MUFA) with relative value of 17, 58%, Methyl linoleate with relative value of 15,82 (PUFA) and Methyl palmitate (SFA) with relative value of 15,75%.

**Key words:** *Euglena* sp., pigments, primary metabolites, shrimp aquacultur wastewater.