

KO-KULTUR KONSORSIUM GLAGAH DAN *Lipomyces starkeyi* UNTUK OPTIMASI PRODUKSI BIOMASSA, LIPID, PROTEIN DAN KARBOHIDRAT

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INTISARI

Mikroalga telah dikenal sebagai bahan baku biofuel generasi ketiga dan memiliki beberapa keunggulan seperti tingkat pertumbuhan yang tinggi, konsentrasi lipid yang tinggi, mudah dibudidayakan dan kebutuhan ruang yang sedikit. Penelitian ini bertujuan untuk mengetahui pengaruh ko-kultur Konsorsium Glagah dan *Lipomyces starkeyi* terhadap perolehan biomassa, lipid, protein dan karbohidrat serta produktivitasnya. Sampel Konsorsium Glagah didapatkan dari Laguna Pantai Glagah sedangkan *Lipomyces starkeyi* didapatkan dari *Indonesian Culture Collection* (InaCC). Kultur dilakukan pada shaker dengan kekuatan 127 rpm, intensitas cahaya 27,75 $\mu\text{mol}/\text{m}^2/\text{s}$ dan suhu 30°C. Kultur diberikan perlakuan terang:gelap dengan durasi 16:8. Medium yang digunakan *Bold's Basal Medium* Modifikasi C/N 16. Biomassa ko-kultur yang diperoleh tertinggi pada hari ke-6 dengan hasil 0,87 g/L dengan produktivitas 0,08 g/L/hari. Lipid yang dihasilkan ko-kultur paling tinggi pada hari ke-4 dengan hasil 1,03 g/g dengan produktivitas 0,21 g/L/hari. Protein yang dihasilkan pada ko-kultur tertinggi pada hari ke-6 dengan hasil 0,16 g/g dengan produktivitas 0,03 g/L/hari. Sedangkan karbohidrat pada ko-kultur tertinggi pada hari ke-6 dengan hasil 4,78 g/g dengan produktivitas 0,68 g/L/hari. Lipid dan karbohidrat yang dihasilkan ko-kultur lebih tinggi dibandingkan monokultur sedangkan biomassa dan protein lebih rendah dibandingkan monokultur. Lipid dan karbohidrat pada penelitian ini berpotensi menjadi sumber untuk produksi biofuel. Ko-kultur Konsorsium Glagah dan *Lipomyces starkeyi* berpotensi sebagai sumber untuk menghasilkan biofuel.

Kata kunci: Konsorsium Glagah, *Lipomyces starkeyi*, ko-kultur

**CO-CULTURE GLAGAH CONSORTIUM AND *Lipomyces starkeyi* FOR
OPTIMIZATION OF BIOMASS, LIPID , PROTEIN AND
CARBOHYDRATES PRODUCTION**

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ABSTRACT

Microalgae known as the 3rd generation of biofuel feedstock and has several advantages such as high growth rate, high lipid content, easy cultivation, and low space requirements. This study aims to determine the effect of the co-culture of Glagah Consortium and *Lipomyces starkeyi* on the yield of biomass, lipids, proteins, and carbohydrates as well as their productivity. The samples of the Glagah Consortium were obtained from the Glagah Beach Lagoon while *Lipomyces starkeyi* were obtained from the Indonesian Culture Collection (InaCC). The culture was carried out on a shaker with 127 rpm, light intensity 27.75 $\mu\text{mol/m}^2/\text{s}$, and temperature 30°C. The Cultures were given light : dark treatment in 16:8 of duration. The medium used was Bold's Basal Medium modified C/N 16. The highest co-culture biomass obtained was on day 6 with a yield of 0.87 g/L and the productivity was 0.08 g/L/day. The highest lipid produced by co-culture was on day 4 with a yield of 1,03 g/g and the productivity was 0.21 g/L/day. The highest protein production in co-culture was on day 6 with yield of 0,16 g/g and productivity of 0.03 g/L/day. The highest carbohydrate in co-culture was on day 6 with yield of 4,78 g/g and productivity of 0.68 g/L/day. Lipids and carbohydrates produced by co-cultures were higher than monocultures, while biomass and protein were lower. Lipids and carbohydrates in this study are potential as sources for biofuel production. The co-culture of the Glagah Consortium and *Lipomyces starkeyi* has the potential as a source to produce biofuels.

Keywords : Glagah Consortium, *Lipomyces starkeyi*, co-culture