

**OPTIMASI PERTUMBUHAN, BIOMASSA, LIPID, DAN KOMPOSISI
ASAM LEMAK PADA KONSORSIUM MIKROALGA ISOLAT GLAGAH
DAN *Arthrospira maxima* (Setchell et Gardner)**

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INTISARI

Penggunaan bahan bakar fosil yang tidak dapat diperbaharui terus meningkat dan menyebabkan dampak merugikan bagi lingkungan. Penelitian mengenai energi terbarukan yang ramah lingkungan seperti biodiesel sangat dibutuhkan. Mikroalga merupakan salah satu sumber biodiesel yang menjanjikan, terutama dalam bentuk kultur campuran karena interaksi kompleks antar spesies dapat mengoptimalkan penyerapan nutrisi sehingga kandungan biomassa dan lipid meningkat. Salah satu kultur campuran mikroalga yang telah dieksplorasi dari alam adalah konsorsium Glagah. Penelitian ini bertujuan untuk mengetahui pertumbuhan, biomassa, lipid dan komposisi asam lemak pada kultur campuran konsorsium Glagah dan *Arthrospira maxima* sebagai substrat biodiesel. Pertumbuhan diukur dengan *optical density* (OD) pada panjang gelombang 540 nm, biomassa diukur dengan metode gravimetri, lipid diukur dengan metode *Blight and Dryer*, dan asam lemak diukur dengan GC MS. Analisis statistik diolah dengan menggunakan *software* SPSS. Hasil yang diperoleh dalam penelitian ini menunjukkan bahwa pertumbuhan, kandungan biomassa, kandungan lipid, produktivitas lipid, *Saturated Fatty Acid* (SFA) dan *Monounsaturated Fatty Acid* (MUFA) konsorsium Glagah dan *Arthrospira maxima* lebih tinggi dari konsorsium Glagah, berturut-turut mencapai $7,4 \times 10^6$ sel mL⁻¹, 19,28 mg mL⁻¹, 2,91 mg mL⁻¹, 30,29%, 36,96% dan 32,21%.

Kata kunci: Konsorsium Glagah, *Arthrospira maxima*, biomassa, lipid

**OPTIMIZING GROWTH, BIOMASS, LIPID, AND FATTY ACID
COMPOSITION IN MICROALGAE CONSORTIUM OF GLAGAH
ISOLATE SAND *Arthrospira maxima* (Setchell et Gardner)**

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ABSTRACT

The use of nonrenewable fossil fuel is continued to rise and causes adverse impacts on the environment. Research on environmentally friendly renewable energy such as biodiesel is needed. Microalgae is a promising source of biodiesel, especially in the form of mixed cultures because of the complex interactions between species can optimize the nutrient absorption so that the content of the biomass and lipid increase. One of the mixed culture microalgae that has been explored from nature is Glagah consortium. This study aimed to determine the growth, biomass, lipid and fatty acids composition in the mixed culture of Glagah consortium and *Arthrospira maxima* as a biodiesel substrate. The growth was measured by optical density (OD) at a wavelength of 540 nm, the biomass was measured by gravimetric method, lipid was measured by the Blight and Dryer method, and fatty acid were measured by GC MS. Statistical analysis was processed using SPSS software. The results indicated that the growth, biomass content, lipid content, lipid productivity, Saturated Fatty Acid (SFA) and Monounsaturated Fatty Acid (MUFA) of Glagah consortium and *Arthrospira maxima* were higher than Glagah consortium, accounted for $7,4 \times 10^6$ cell mL⁻¹, 19,28 mg mL⁻¹, 2,91 mg mL⁻¹, 30,29%, 36,96% and 32,21%, respectively.

Keywords: Glagah consortium, *Arthrospira maxima*, biomass, lipid