

Produksi Biomassa dan Protein Nostoc HS-20 yang Dibiakkan dalam Medium BG-11 dan BG-11 (N-free) pada Sistem Fotobioreaktor Kedap Suara = Production of Nostoc HS-20 Biomass and Protein Grown in BG-11 and BG-11 (N-free) Medium on a Soundproof Photobioreactor System

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Abstrak

Penelitian mengenai produksi biomassa dan protein Nostoc HS-20 yang dibiakkan dalam medium BG-11 dan BG-11 (N-free) pada sistem fotobioreaktor kedap suara telah dilakukan. Nitrogen merupakan makronutrien yang dapat memengaruhi produksi biomassa dan protein mikroalga. Nostoc HS-20 merupakan strain lokal Indonesia yang ditemukan di air panas Gunung Pancar, Jawa Barat. Fotobioreaktor yang digunakan untuk membiakkan Nostoc HS-20 pada penelitian dibedakan atas dua kelompok perlakuan. Kelompok pertama menggunakan medium BG-11 yang mengandung NaNO_3 dan kelompok kedua menggunakan medium BG-11 (N-free) tanpa NaNO_3 . Penelitian dilakukan untuk mengukur dan membandingkan produksi biomassa, konsentrasi protein, dan morfologi sel Nostoc HS-20 pada medium BG-11 dan BG-11 (N-free). Hasil uji Mann-Whitney menunjukkan bahwa tidak terdapat perbedaan antara rerata berat biomassa basah, berat biomassa kering, dan rerata kandungan klorofil a Nostoc HS-20 dalam medium BG-11 dan BG-11 (N-free) ($=0,05$). Selanjutnya, terdapat perbedaan tidak signifikan antara persentase protein dalam berat basah Nostoc HS-20 pada kedua medium. Dalam medium BG-11 (N-free) konsentrasi protein sebesar 0,0075%, sedangkan dalam medium BG-11 sebesar 0,0081%. Meskipun demikian, morfologi sel hormogonium hanya dapat ditemukan pada Nostoc HS-20 dalam medium BG-11 (N-free).

.....Research has been conducted on the production of Nostoc HS-20 biomass and protein grown in BG-11 and BG-11 (N-free) media on a soundproof photobioreactor system. Nitrogen is a macronutrient that can affect the production of microalgae biomass and protein. Nostoc HS-20 is a local Indonesian strain found in the hot springs of Mount Pancar, West Java. Photobioreactor used for culturing Nostoc HS-20 in this study was divided into two treatment groups. The first group used BG-11 medium containing NaNO_3 , and the second group used BG-11 (N-free) medium without NaNO_3 . This study measured and compared the biomass production, protein concentration, and cell morphology of Nostoc HS-20 on BG-11 and BG-11 (N-free) medium. The results of the Mann-Whitney test showed that there was no difference between the average weight of wet biomass, dry biomass weight, and the average chlorophyll a content of Nostoc HS-20 in BG-11 and BG-11 medium (N-free) ($=0.05$). The two media showed no significant difference between Nostoc HS-20 protein percentage from fresh weight. In BG-11 (N-free) the protein percentage is 0.0075%, while in BG-11 medium, it was 0.081%. However, hormogonium cell morphology can only be found on Nostoc HS-20 in BG-11 medium (N-free).