ABSTRACT

Lipid-Producing Microalgae and Cyanobacteria from Situ Gintung and Situ Pamulang and their Potential for Biodiesel Feedstock. *Megga Ratnasari Pikoli, Arina Findo Sari, Nur Amaliah Solihat, Muhammad Rizky Mu'arif.*

Microalgae and cyanobacteria are photosynthetic microorganisms that potentially developed as lipid producers for biodiesel feedstock which is the renewable and environmentally friendly energy. The history of organic and inorganic contamination in Situ Gintung and Situ Pamulang, the two largest lakes in Tangerang Selatan, makes them potential sources in the discovery of high-lipid yielding microorganisms. The main aim of this research is to prepare renewable resources for the future in the form of lipid-producing microorganisms from local resources. This study isolated various species or genera of microalgae and cyanobacteria from both lakes, then selected them based on their indigenous trait in producing lipid. Among the total of 113 isolates obtained from the isolation step, 78 isolates were viable isolates, consisting of 46 isolates from Situ Gintung and 32 isolates from Situ Pamulang. The identification was performed on the microscopic appearance compared to some references. Twenty isolates were selected in the next step based on the qualitative abundance in their culture. The selected isolates were examined for their lipid content by direct transesterification method. The isolate with the highest lipid content of 67% was G4-9 which isolated from Situ Gintung sample and identified as microalgae *Nannochloropsis limnetica*. Fatty acid methyl esters profile determined by gas chromatography-mass spectrometry showed the high percentage (56.98%) of hexadecanoic acid and followed by octadecadienoic acid, which both are known as the common components in biodiesel. In conclusion, the isolate G4-9 is the local candidate for biodiesel feedstock that needs to be developed in future studies.

Keywords: biodiesel, cyanobacteria, microalgae, Situ Gintung, Situ Pamulang