

ABSTRACT

Haris, Fathir. 2012. **An Influence of Temperature Difference on the Growth and Lipid Level of Microalgae *Scenedesmus* sp. Cultivated on Tapioca Liquid Waste.** Thesis. Biology Department, Science and Technology Department, Maulana Malik Ibrahim State Islamic University of Malang. Advisor I: Romaidi, M.Si, Advisor II: Ach. Nasichuddin, M.A.

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The use of fossil fuel recently increases more that causes the lack of fossil fuel stock. As the lack of the fuel stock, it needs an alternative fuel which is modernized. A kind of modernized alternative fuel having big potential to develop in Indonesia is biodiesel. Biodiesel as a modernized energy source is considered safer against environment instead of fossil fuel. Microalgae is an unicellular microorganism that has potential to produce biodiesel raw material. One of microalgae species potentially developed as a biodiesel raw material source is *Scenedesmus* sp. *Scenedesmus* sp belongs to microalgae species that has cosmopolitan feature and high growth rate. The optimum growth of *Scenedesmus* sp needs some factors, such as temperature. Temperature is an environment factor influencing to the process of metabolism and photosynthetic. The temperature rise on microalgae will stimulate cell metabolism activity that causes the increase of diffusion rate as well as the temperature. In addition, temperature also increases the respiration of microalgae *Scenedesmus* sp.

This research is conducted on July, 2012 in Ecology laboratory and Optic laboratory, Biology department, Science and Technology faculty, Maulana Malik Ibrahim State Islamic University of Malang. The lipid level analysis on microalgae *Scenedesmus* sp is done in Chemistry laboratory, Muhammadiyah University of Malang. The observed parameter includes the abundance of *Scenedesmus* sp cell everyday for ten days, the influence of giving the different temperature such as 15°C, 20°C, 25°C and 30°C on the growth and lipid level of microalgae *Scenedesmus* sp cultivated on tapioca liquid waste.

Based on the research finding, there is an influence of temperature difference to the growth and lipid level of microalgae *Scenedesmus* sp cultivated on tapioca liquid waste. It is indicated from the highest average value of *Scenedesmus* sp cell growth at temperature 30°C with the growth average value is 5.571.969 cell/ml while the lowest cell growth average at temperature 15°C with the growth average value is 4.663.030 cell/ml. While the lipid level resulted is indicated from the highest lipid level average value resulted by *Scenedesmus* sp. on treatment 30°C that is 33,39% while the lowest lipid level average value is on the treatment 15°C with the lipid level average resulted that is 23,41%.