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OR -MBT-02

## Biomass and Lipid Productivities of A Newly Isolated Diatom (*Melosira* sp IND-UHO-029) at Increasing Salinities

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### Abstract

Microalgae have been suggested as a potential feedstock for biodiesel due to their ability to produce lipids that can be converted to biodiesel. The aim of this study was to determine the growth, biomass and lipid productivities of a newly isolated diatom *Melosira* sp IND-UHO-029 (Bacillariophyceae) at increasing salinities. The *Melosira* sp was isolated from Tanjung Tiram Waters, Southeast Sulawesi, Indonesia and maintained at Microalgal Culture Collection at Faculty of Fisheries and Marine Science, Halu Oleo University, Kendari. The microalgal strain was cultured in 500 mL Schott bottles containing f/2 medium at increasing salinities starting from salinity 3% NaCl to 6% NaCl (in triplicates), under a light intensity of about  $100 \mu\text{mol}\cdot\text{photon}\cdot\text{m}^{-2}\cdot\text{s}^{-1}$ , 12 hours light and 12 hours dark cycles and at room temperatures (25-34°C). This study showed that the strain can grow well over the wide range of salinity tested (3-6% NaCl). The highest specific growth rate ( $0.54 \text{ d}^{-1}$ ) achieved at 4% salinity and the lowest ( $0.32 \text{ d}^{-1}$ ) obtained at 6% salinity. The lipid content ranged from 15-35 %. The highest biomass and lipid productivities were achieved at 4% salinity ( $0.5508 \text{ g}\cdot\text{L}^{-1}\cdot\text{d}^{-1}$  and  $0.18 \text{ g}\cdot\text{L}^{-1}\cdot\text{d}^{-1}$ , respectively). This study suggests that the *Melosira* sp IND-UHO-029 produce high biomass and lipid productivities at 4% salinity and hence a promising strain for mass cultivation in saline-saline media as biodiesel feedstock.

**Keywords:** Biomass, Lipid, *Melosira* sp IND-UHO-029, Productivity, High Salinity