

## **Microalgae Biorefinery from Palm Oil Mill Effluent (POME): Bioremediation and Biomass Production**

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### **Abstract:**

Palm oil processing in Malaysia produces massive amounts of palm oil mill effluent (POME) every day. Effective treatment of POME is in necessity for compliance of regulations and for environmental sustainability. There is a new innovation in effluent treatment which is the application of microalgae for wastewater treatment and biomass production. The present study applied microalgae isolated from POME for the biomass production and bioremediation. The microalgae isolated are identified as *Chlorella sorokiniana*. Microalga was cultured in bold basal medium (BBM) for 20 days in a total volume of 250 mL, range of pH 6 to 8, with continuous of air supply and light illumination, as well as supplementation. The highest microalgal biomass concentration attained was 3.02 mgL<sup>-1</sup> at pH 7, white light illumination, and 25 mM of glucose and urea supplementation. Furthermore, the study has found reduction in chemical oxygen demand (47%), total nitrogen (76%), and color (69%) with 50% POME addition into the microalgal culture medium. Overall, this study is expected to be able to provide information to stakeholders on wastewater technology improvement, the private sector for future investment, and the government sector in making decisions. With that, sustainable POME management can be achieved with environmental sustainability.