

## Pretreatment of livestock effluent for the cultivation of *Chlorella sorokiniana* T89

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The treated livestock wastewater effluent may still contain a high concentration of nitrogen and phosphate posing an environmental risk such as eutrophication. *Chlorella* (*Chlorella sorokiniana* T89) is a freshwater microalga used in research of biofuel, animal feed, and wastewater treatment due to the ability of high growth rate and ease of cultivation. The objective of this research is to investigate whether *Chlorella* can be cultivated by livestock effluent and can effectively reduce the high concentration of nitrogen and phosphate. The effluent was treated by no heating, boiling and sterilization (2 hours at 150 degrees Celsius) and mixed at different ratio of BG-11 medium with micronutrients (0%, 50%, & 100%, respectively). The growth of *Chlorella* was measured daily at 682 nm using a spectrophotometer over a period of 7 days. Results showed that direct culture in raw effluent lead to very poor growth (Day 7,  $OD_{682}=0.1$ ), and heating and sterilization alone improved growth by 100%. It was postulated that the improved growth was contributed by the elimination of microorganisms by sterilization, yet when raw effluent was added with BG-11, the growth was increased 6 times ( $OD_{682}=0.6$ ). The best growth of *Chlorella* was observed in effluent treated both with sterilization and the addition of BG-11 ( $OD_{682}=0.9$ ). Nutrient analysis of the treated waste is undertaken.

Keywords: Microalgae, *Chlorella sorokiniana*, BG-11 medium, Wastewater effluent treatment, Nutrient removal