

TITLE: ENRICHMENT OF MICROALGAE FROM WASTEWATER COMING A ANAEROBIC REACTOR TREATING SANITARY WASTEWATER AT FEDERAL UNIVERSITY OF LAVRAS, LAVRAS, MG, BRAZIL

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ABSTRACT:

The microalgae culture is an efficient biological system that uses solar energy for the production of organic matter, which allows great annual yields of biomass. The objective of this work is to cultivate microalgae under environmental conditions using only the effluent and in laboratory conditions using culture medium and effluent. The effluent was characterized according APHA (2005). The culture at ambient conditions (1) was carried out in a 100L tank wastewater where it was added 40L of the effluent from the Upflow Anaerobic Sludge Blanket (UASB), coming of the Wastewater Treatment Plant (WWTP) at Federal University of Lavras (UFLA). The cells were counted in a/using a Neubauer chamber every 2 days for 15 days. Subsequently, the culture in the laboratory (2) was performed in duplicate, using 10% of inoculum (tank wastewater culture), 45% of BG-11 culture medium and 45% of effluent. Additionally, a control culture (2') was also performed in duplicate, where 10% of the inoculum and 90% of the BG-11 culture medium were used and Neubauer's daily counting of both (samples/cultures) for 10 days. Analyses of the effluent, in mg/L, BOD: 38.83, COD: 2192, Alkalinity: 287.9, Turbidity: 23.46, TVS: 240 and Nitrogen: 35.93. For culture (1) we obtained an average growth of 2.2×10^6 . From the second culture (2), the results showed an average growth equal 5.5×10^6 . Finally, the control culture (2') resulted in 4.5×10^5 , all of them measured in cells/ml. These results show that the use of the wastewater allow the assimilation of macronutrients improving the performance of the reactor. Through the Neubauer chamber count we can identify the phases of the growth curve: lag (cell adaptation), log (cell multiplication), stationary (phase where there is a

greater number of cells) and cell death of all cultures. The stationary phase was reached by cultivation 1 in eight days showing a success cell yield. Meanwhile, culture (2), treated with the effluent was much more (successful/promising) than (2'), proving the efficacy of the effluent as a nutrient medium. One of the main scientific instigations related to this research proposal is the biological factor involved in the growth and generation of microalgae biomass in the culture, the evaluation of growth and characterization of the product obtained, as well as the evaluation of the biomass obtained where the need for further scientific studies is highlighted.

Keywords: effluent, culture, microalgae, *Chlorella*, Wastewater treatment Plant.

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