
Poster

MICROALGAL BIOMASS PRODUCTION IN BUBBLE COLUMN USING URBAN WASTEWATER FROM SECONDARY TREATMENT



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ABSTRACT

Motivation: Currently, urban wastewater treatment plants generate treated effluent, which contained pollutants that are discharged into aquatic resources. Microalgae for its growth could use these contaminants/nutrients. This use opens the possibility to achieve three goals: i) Complete wastewater treatment, ii) The generation of algal biomass rich in energetic compounds, and iii) the incorporation of atmosphere or industrial carbon dioxide to the algal culture by its injection into the culture media with the aim to reduce the greenhouse effect (Malvis et al., 2019).

Methods: For the complete urban wastewater treatment, microalgal cultures in bubble columns were proposed. In this sense, all the experiments were performed under natural environmental conditions. The microalga *Chlorella vulgaris* was used under different aeration rates (varied from 1 L/min to 5 L/min). The common operating conditions were pH of the culture media 9.0, ambient temperature and solar light.

Results: The algal culture media in urban wastewater from secondary treatment registered variation in the values of maximum specific growth rate (0.00390-0.00942 1/h) and volumetric biomass productivity (0.0261-0.439 mg/(L h)) under different aeration rates. Both parameters were registered its highest value at aeration rate equal to 3 L/min. TOC removal was decreased with the aeration rate increase and varied in the range 14 % to 62.3 %.

Conclusions: The use of *Chlorella vulgaris* for its growth in urban wastewater from secondary treatment was verified. The highest values for maximum specific growth rate (0.00943 1/h) and biomass productivity (0.439 mg/(L h)) were determined in culture worked with aeration rate equal to 3 L/min.

REFERENCES

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