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CARBON BIOCAPTURE IN THE FRAME OF THE CLIMATE CHANGE AND AIR QUALITY ISSUES: A PRELIMINARY MICROBIOTA SCREENING

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Abstract

In this study, the opportunity of coupling VOC-degraders and microalgae is investigated as a tool for the enhanced C-capture in the air treatment biosystems. Bacterial VOC-degraders (*Arthrobacter sp.* and *Bacillus sp.*) from compost and the microalgae *Arthrospira platensis* (strain PCC 8005) were the candidates used for this purpose. Preliminary batch experiments were carried out with immobilized and co-immobilized microorganisms in alginate beads and the microbiota development in the presence of a model VOC (i.e. ethanol, methanol, toluene, acetaldehyde) was followed. Results show that from the screened options in this study, the co-immobilized consortium of microalgae and bacteria is the most suitable solution for enhanced biomass production and efficient removal of such pollutants. Overall, promising perspectives for air treatment via biosystems with enhanced environmental performance is revealed.

Key words: A. platensis, alginate beads, atmospheric air protection, bacteria, (co)immobilization, microalgae, sustainable air treatment process, volatile organic compounds

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