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New approaches to wastewater treatment by coupling biological and photocatalytic technologies

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Abstract

The generation of wastewater due to human activities are the main responsible for environmental problems. These problems are caused by the large amount of organic and inorganic compounds related to the presence of complex and toxic pollutants [1]. This study investigates the performance of different processes coupling biological and photocatalytic technologies for the removal of toxic pollutants from landfill leachate, olive oil mill wastewater and cheese effluents. Nanoparticles were synthesized using the sol-gel method and characterized by several techniques. The optimal conditions of combined processes were determined and after wastewater treatments, the removal of organic matter and toxic compounds from wastewaters were evaluated. The impact of the treated olive oil mill wastewater on the morpho-physiological parameters of barley seeds and seedlings and young olive plants was evaluated, and the obtained results suggest its potential reuse as a biofertilizer.

Keywords: Biofertilizer, Hybrid process, Nanoparticles, Wastewater.

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References:

[1] Costa et al., 2023, Biochar production from microalgae: a new sustainable approach to wastewater treatment based on a circular economy, Enzyme and Microbial Technology, 169, 110281.