



Phycoremediation of Olive Wastewater for Sustainable Production

Moustafa, S.¹, El Shimi, H.^{2*}

¹Microbiology Department, Agriculture Research Center (ARC), Gamaa Street, Giza, Egypt

²Chemical Engineering Department, Cairo University, Gamaa Street, Giza, Egypt

Abstract : The dual role of cyanobacteria in wastewater phycoremediation for sustainable biomass production combined with biorefinery approach is a feasible option. Phycoremediation is the process of employing algae for removing excess nutrient load from wastewater and subsequently diminish the pollution load. Industrial processes for olive production generate a considerable amount of oil wastewater, designated "olive mill wastewater" (OMW) known as *alpechin*, it caused serious environmental problems particularly in the Mediterranean areas where it is generated in huge quantities in short periods of time. The objective of this research was to study the ability of three cyanobacteria strains (*Nostoc muscorum*, *Anabaena oryzae* and *Spirulina platensis*) to grow, either individually or in a mixture, on relatively high olive mill wastewater (OMW) concentrations of 50, 75 and 100%. The highest phenolic compounds biodegradability and maximum biomass production have been taken as main criteria in the selection of the best treatment in this study. Best results of all growth parameters and phenolic compounds degradation were obtained by mixed culture and 50% OMW and these parameters make the potential of bio-formulating such these wastes into sources for olive trees bio-organic fertilizer is the most preferable methods for the agro-sustainable system. The cultivated algal species are suggested to be a promising feedstock for biodiesel, food and animal feed production according to the biochemical composition.

Keywords: Cyanobacteria, Phycoremediation, Sustainable, Biorefinery, OMW, Biodiesel.

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