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Bio-Desalination and Bioremediation of Agroindustrial Wastewaters Using Yarrowia Lipolytica

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Abstract : The current study deals with the biological treatment of saline wastewaters generated by various agro-food industries using Yarrowia lipolytica. The ability of this yeast was studied on the mixture of olive mill wastewater and tuna wash processing wastewater. Results showed that the high proportion of olive mill wastewater in the mixture about (75:25) is the suitable one for the highest Y. lipolytica biomass production, reaching 11.3 g L^{-1} after seven days. In addition, results showed significant removal of chemical oxygen demand (COD) and phosphorous of 97.49 % and 98.90 %, respectively. On the other hand, Y. lipolytica was found to be effective to desalinate all mixtures reaching a removal of 92.21 %. Moreover, the analytical results using Fourier transform infrared spectroscopy (FTIR), X-ray diffraction (XRD), and scanning electron microscopy (SEM) confirmed the biosorption of NaCl on the surface of the yeast as nanocrystals form with a size of 47.3 nm.

Keywords : nanocrystallization of NaCl, desalination, wastewater treatment, yarrowia lipolytica
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