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Evaluation of influential factors in the degradation of red 40 dye using white-rot fungi

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Several textile and food dyeing industries discharge annually large amounts of dissolved dyes, which are disposed with minimal or no treatment. These compounds are highly toxic for both, the aquatic ecosystem and human health. It has been reported that the use of chemical, physical and biological treatment methods of colored effluents. In this study a strategy that combines a physical adsorption method and a biological process was implemented. To evaluate the red 40 dye (R40) degradation under Solid State Fermentation (SSF) conditions, nine different treatments were carried out, in which the moisture content, carbón:nitrogen ratio (C: N) and the copper sulfate concentration as Inductor (IC) were the variables. Each of these treatments was carried out with the fungal species *Trametes versicolor* and *Pleurotus ostreatus*. Corn cob wastes with R40 dye after an adsorption process was used as solid support for the SSF. Moisture content of 75%, C:N ratio of 30 and IC of 0.5 mM, were the best conditions found to *T. versicolor* achieving a degradation percentage of 96.9%. With *P. ostreatus*, 81% of degradation was achieved under the best conditions, moisture content of 80%, C:N ratio of 20, and without inductor addition. The results suggest that the process of SSF with white-rot fungi is efficient for the R40 dye degradation; therefore this methodology could be implemented on a larger scale.

Biography

Ana Jaramillo has completed her Biological Engineering Degree from National University of Colombia and was awarded as the Best Average of her career. Currently, she is pursuing her Master's studies in Biotechnology at National University of Colombia. She has been developing investigative work during four years about Biological process in the Research Group of Experimental Chemistry in the area of Solid State Fermentation. She has published papers in an indexed national review and participated in international congresses.

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