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Factorial design analysis for degradation of red 40 dye in solid state fermentation

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The colored effluents from different industries have affected profoundly the aqueous environment, causing not only an esthetic deterioration, but also a health risk because it has been reported that some dyes are toxic and carcinogenic. Some chemical, physical and biological methods have been used to treat this kind of contaminants, in this study a combined method physical and biological was used. Full 2² factorial design was performed to evaluate the degradation of red 40 dye under solid state fermentation conditions, using two white rot fungi species, *Pleurotostreatus* and *Pleurotuspulmonarius*. The red 40 dye was removed from aqueous solution by a batch adsorption procedure using corncob wastes as adsorbent material. This agricultural waste impregnated with dye was the solid support for the solid state fermentation. The analyzed variables were, C:N ratio (20-40) and inoculum amount (2-6 plugs of fungal mycelia 10 mm diameter), while substrate dosage (150 mg), moisture content (80%) and temperature (25°C) were fixed. The best conditions for *Pleurotostreatus* were C:N ratio of 40 and 6 plugs of fungal mycelia, achieving a decolourization percentage of 67,4% and an adjustment coefficient of 99,5%. For *Pleurotuspulmonarius* the best conditions were the same but it achieved a low decolourization percentage of 45,4%. The results suggest that a degradation of red 40 dye under solid state fermentation conditions using *Pleurotostreatus* is a viable and low cost option to degrade dyes in industrial effluents.

Biography

Ana Jaramillo has completed her Biological Engineering Degree at the age of 22 years from National University of Colombia and she was awarded as the best average of her career. She is currently taking her Masters studies in Biotechnology at National University of Colombia, Science Faculty. She has been developing investigative work during three 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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