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Effluent Treatment By Microbes Isolated From Handmade Paper Industrial Effluent

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The present study deals with the effect of microbial treatment of handmade paper (HMPI) industrial effluent which is located in the urban area of Jaipur, Rajasthan, India. Handmade paper industries generate a huge amount of effluent during the processing of paper which is discharged to nearby water bodies and a major cause of pollution. This poses harmful effects on human health and environment and therefore, need to be treated urgently. The main challenge of the present study is – mutagenicity of industrial effluent. Most of the studies reveal the reduction in physicochemical parameters. However, there are few reports about the treatment of effluent for the reduction of mutagenicity. Keeping this in mind, effluents were collected form these industries in sterile bottles and physicochemical parameters and mutagenicity were analyzed on initial day. These effluents were treated in nutrient amended and non-amended condition with microbes which were previously isolated from the sludges of same waste and screened for their degradative ability. Results were compared with untreated control; effluent treated with Phanerochaetechrysosporium (widely used fungal species for industrial effluent treatment) and activated sludge. It was found that activated sludge treatment reduces the colour and COD of the effluents. However, it is not as effective as the other microbial isolates in reducing the mutagenicity of the effluents. Isolated Streptomyces halsteii and Phanerochaetechrysosporiumwere found to be effective in reducing colour, COD and mutagenicity in comparison to untreated control even in non-amended condition. Therefore, treatment with these microbes will not only reduce physicochemical parameters but also mutagenicity and makes the industrial wastewater safe for discharge. The unique fact about this study is- the microbes did not require the supplementation of nutrients for reducing physicochemical parameters and mutagenicity.

Biography

She is Asst. Professor in Amity Institute of Biotechnology, Amity University of Rajasthan, Jaipur. She completed PhD from University of Rajasthan, Jaipur. She has qualified UGC-CSIR NET- 2004, GATE-2002 and TIFR examinations. Her general research subjects include bioremediation of paper and pulp industrial waste, mushroom cultivation, genotoxicity assays, Ames test and immunological techniques. She worked on the diagnosis of tuberculosis using FAST plaque TB test. She attended many National or International conferences and presented her work in form of oral and poster presentation. She won many awards and prizes in various National and International conferences. She has published many research papers, books and book chapters with National and International Journals and publishers. She is acting as reviewer and editor in many national and international journals. She has invited in many conferences to deliver invited and plenary speech. She chaired a session in Bioproducts-2012 conference in USA.

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