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Maulin P Shah

Enviro Technology Limited, India

Exploitation of *Enterobacter* sp. in microbial degradation of acrylamide: An environmental bio-remedial approach

A widespread use of acrylamide, probably a neuro-toxicant and carcinogen, in various industrial processes has led to environmental contamination. Fortunately, some microorganisms are able to derive energy from acrylamide. In the present work, we reported the isolation and characterization of a novel acrylamide-degrading bacterium from domestic wastewater in Chonburi, Thailand. The strain grew well in the presence of acrylamide as 0.5% (W/V), at pH 6.0 to 9.0 and 25 °C. Identification based on biochemical characteristics and 16S rRNA gene sequence identified the strain as *Enterobacter* sp. Degradation of acrylamide to acrylic acid started in the late logarithmic growth phase as a biomass-dependent pattern. Specificity of cell-free supernatant towards amides completely degraded butyramide and urea and 86% of lactamide. Moderate degradation took place in other amides with that by formamide>benzamide>acetamide>cyanoacetamide>propionamide. No degradation was detected in the reactions of N, N-methylene bisacrylamide, sodium azide, thioacetamide and iodoacetamide. These results highlighted the potential of this bacterium in the cleanup of acrylamide/amide in the environment.

Biography

Maulin P Shah is currently the Chief Scientist and Head of Industrial Waste Water Research Lab, Division of Applied and Environmental Microbiology Lab at Enviro Technology Ltd., India. He is a Microbial Biotechnologist with diverse research interests. His work has been focused to assess the impact of industrial pollution on microbial diversity of wastewater following cultivation dependent and cultivation independent analysis. His major work involves isolation, screening, identification and genetic engineering of high impact of microbes for the degradation of hazardous materials. He is an active Editorial Board Member in 140 highly reputed journals in the field of environmental and biological sciences.

shahmp@beil.co.in

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