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## Pectinase from marine Bacillus subtilis: An efficient bioscouring agent

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Bioscouring refers to the enzymatic removal of pectins and waxes from the surface of a cotton fiber, which endows it withimproved bleachability and dyeability. This process preserves the fiber's structure and strength, and avoids the high energy consumption and severe pollution problems that are associated with conventional alkaline treatments. In the present study Pectinase enzyme was extracted from marine Bacillus subtilis isolated from marine sediment sample collected from Chinchani beach, India and was optimized under different cultural conditions. The partially purified enzyme was used in the scouring of the cotton fabric. It was observed that water absorbing capacity of the enzymatically scoured fabric was comparable with the alkaline scoured fabric. In addition when both the enzymatically scoured cotton as well as alkaline scoured cotton was dyed, colour strength values determined were more or less similar indicating efficient removal of pectin from graige cotton.

**Keywords:** Bioscouring, Marine, Bacillus subtilis, Pectinase.

### Biography

Manasi Joshi is pursuing Ph.D. in Biotechnology at Department of Fibres and Textile Processing Technology, Institute of Chemical Technology (ICT), Mumbai. She has published one paper titled as 'Dyeing of Fabrics with a Natural Orange Pigment Extracted from Bacteria Isolated from Garden Soil' in Journal of Textile Association, Nov- Dec 2011, pp 235-237.

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## In vitro evaluation of modified polyethylenimine polymers as efficient carriers for nucleic acids

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In arena of gene therapy, cationic polymers as non viral gene delivery systems are the most promising candidate, due to their facile synthesis, robustness. Among all cationic polymers, branched PEI is the most widely studied polymer because of its efficient capability to condense DNA and the resulting PEI/DNA complex can act as proton sponge, thus enabling DNA delivery into cytoplasm by rupturing endosomes. High charge density on bPEI is responsible for high transfection efficiency; however, it simultaneously contributes to increased cytotoxicity. To improve the biocompatibility of PEI for in vitro and in vivo applications, the modifications have been incorporated. Here, in the present study, we have examined the potential of hydrophobically modified PEI polymers for their cytotoxicity and ability to deliver gene to cells in vitro. For this purpose, primary amines of bPEI were substituted by hydrophobic and positively charged N,N,N',N'-tetramethylguanidium moiety (Tmg) by treating PEI with 2-(1H-benzotriazol-1-yl)-1,1,3,3-tetramethyluronium hexafluorophosphate (HBTU). A small series of Tmg-P polymers was synthesized by varying the amount of HBTU. These modified polymers were characterized by spectroscopic techniques and their percent substitutions were determined. Subsequently, these polymers were evaluated for their buffering capacity and in vitro studies (transfection and cytotoxicity) on various mammalian cells and the results compared with the standard transfection reagents. In vitro studies revealed that one of the formulations with ~5.2% substitution of Tmg groups on PEI showed enhanced transfection efficiency and cell viability out competing the standard transfection reagents in the absence and presence of serum. The study suggests that projected modified PEI polymers may act as efficient vectors for in vivo gene delivery.

### Biography

Manohar Mahato has completed his M.Sc. in Chemistry (Organic) from University of Delhi, India in 2009. He is pursuing his Ph.D. in Bio-organic Chemistry from Institute of Genomics and Integrative Biology (IGIB), CSIR lab, New Delhi, India. He is working in the area of design and synthesis of self assembled peptides and modified polymers for delivery of biomolecules. He has two papers in reputed journals.

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