Title:	Environmental pollution reducing strategy for scouring of undegummed sisal fibers using xylanase and pectinase enzymes
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Abstract:	This study was undertaken to investigate the potential of bioscouring in the processing of undegummed sisal fibers, using xylano-pectinolytic enzymes. Optimum bioscouring was obtained at pH 8.5 and 50 mM buffer molarity, using xylanase (10 IU) and pectinase (8 IU), with a material to liquor proportion of 1:25 (g:ml), EDTA (2 mM) and Tween 80 (0.5%), at 50 °C temperature with agitation rate of 55 rpm and treatment period of 60 min. Enzymatic treatment of sisal fibers enhanced the brightness and whiteness by 11.52 and 6.83%, respectively, and reduced the yellowness by 7.14% in comparison to control. The use of xylanase and pectinase enzymes completely replaced the chemical scouring method for removing non-cellulosic impurities. Thus, enzymatic scouring is energy saving and ecofriendly, since it completely eliminated the use of toxic chemicals used in alkaline scouring. An increase of 23.75% and 11.58% in brightness and whiteness of enzymatically scoured cum bleached fibers, as compared to chemically scoured cum bleached fibers was finally obtained, along with reduction in yellowness by 27.99%. This is the first report demonstrating environmentally sustainable enzymatic approach for scouring of undegummed sisal fibers, using enzymes, simultaneously produced from a bacterial isolate.
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