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Grafted Sesbania Gum: A Novel Derivative for Sugarcane Juice Clarification

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ABSTRACT

This work describes the significance of graft copolymer induced flocculation process in sugarcane juice clarification. The naturally occurring cinnamic acid has been successfully incorporated into the structure of sesbania gum through *microwave assisted* technique (hybrid of conventional and microwave based method) to develop novel, non-toxic, eco-friendly product with highly extended structure. The customized structure of gum derivative has been characterized by a number of modern techniques like ^{13}C NMR, FTIR, SEM, XRD, TGA, DSC, elemental and viscometric analysis. The separation of suspended colloidal impurities from cane juice has been achieved through the application of synthesized gum derivative as a flocculant. The clarification performance of the graft copolymer has been evaluated in terms of turbidity, absorbance, and degree brix (^{0}bx). The flocculant exhibited maximum efficiency at 1.0 ppm (optimized dose) without altering the nutritional parameters (% sugar content). The clarified juice thus obtained may be used as a beverage for direct consumption or for the manufacture of white sugar.

Keywords: Sugarcane juice; graft copolymer; flocculation; solid-liquid separation.

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