

Development of Functional Jute Fabric for Food Packaging

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Abstract

Jute packaging materials have garnered industrial interest and recent research attention for their antimicrobial finishing for food safety and security. This research paper addresses the growing need for sustainable packaging solutions in the food industry and explores the development of functional jute fabric as a viable alternative. The study aims to enhance the functional properties of jute fabric to meet the demanding requirements of food material packaging. The research methodology involves a systematic approach to impart antibacterial properties to the jute fabric. Various eco-friendly and food-safe additives are considered for treatment, including surface coatings and chemical modifications. The antibacterial efficacy is assessed through agar disc diffusion method against common foodborne pathogens. The study explores the optimization of treatment parameters to achieve effective microbial inhibition without compromising the overall integrity of the jute fabric. Special attention is given to ensuring that the developed antibacterial properties comply with safety standards for food contact materials. The findings of the research indicate a successful enhancement of the mechanical strength and functional properties of jute fabric for food material packaging. The research demonstrates the successful development of functional jute fabric with enhanced antibacterial properties against *Phanerochaete chrysosporium* and *Escherichia coli* bacteria and the zone of inhibitions for those bacteria were 11 mm and 12 mm respectively. The significant efficiency of such antibacterial activities against foodborne pathogens might help ensure the safety and prolong the shelf life of packaged food goods. The findings suggest that the fabricated jute fabric holds promise as a sustainable and effective alternative to conventional packaging materials.

Keywords

Jute fabric; Sustainable packaging; Antimicrobial properties, Food safety and security

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Biographies

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