DEVELOPMENT AND QUALITY EVALUATION OF FUNCTIONAL BREAD FORTIFIED WITH DIETARY FIBER EXTRACTS FROM COCONUT KERNEL

LIBRARY
23 JUL 2025
EASTERN UNIVERSITY, SRI LANKA.

By

G.D.D. Malshani

FTC249
Project Report
Main Library, Eastern University, Sri Lanka

Department of Biosystems Technology

Faculty of Technology

Eastern University, Sri Lanka

Chenkalady

2025

ABSTRACT

This study investigated the development and quality evaluation of functional bread fortified with dietary fiber extracts from Defatted Desiccated Coconut Residue (DDCR). The DDCR dietary fiber exhibited low free fatty acid (0.43%) and peroxide values (1.92 meq/kg), indicating good lipid stability and raw material quality. Proximate analysis showed low moisture (8.48%), fat (0.36%), moderate protein (5.36%), and high total dietary fiber content (80.11%), confirming its suitability as a fiber-rich functional ingredient. The water absorption capacity of DDCR dietary fiber was significantly higher than wheat flour, suggesting benefits for moisture retention in baked products. Bread fortified with DDCR dietary fiber showed increased moisture, crude fiber, and fat content, with a corresponding decrease in carbohydrates, protein, and total energy. Sensory evaluation indicated that the bread sample fortified with 2.5% DDCR dietary fiber (T1) was the most preferred, achieving the highest overall acceptability, appearance, odor, taste, and texture scores. Higher fiber levels (10%) negatively affected sensory and physical qualities. Physical and texture analyses revealed that increased DDCR dietary fiber reduced loaf volume and height but enhanced moisture retention and firmness. Color measurements showed a shift toward yellower crumb with fiber addition. Overall, DDCR dietary fiber is a promising functional ingredient for fiber enrichment in bread, with moderate inclusion levels (2.5%) balancing nutritional enhancement and consumer acceptability. These results highlight the potential of defatted desiccated coconut residue dietary fiber as a functional ingredient for enhancing fiber-rich bakery products.

Keywords: Bread, Coconut, Defatted Desiccated Coconut Residue, Dietary fiber fortification, Functional food.

TABLE OF CONTENT