

EVALUATION OF THE TECHNO-FUNCTIONAL PROPERTIES OF DIETARY FIBER EXTRACTED FROM ORANGE PEEL USING MICROWAVE-ASSISTED AND CONVENTIONAL EXTRACTION

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Dietary fiber is a crucial component found in plant-based foods, playing an essential role in human health and nutrition. It is categorized into two types: soluble dietary fiber (SDF) and insoluble dietary fiber (IDF). In the food industry, dietary fibers are utilized for their functional properties, such as improving texture, enhancing moisture retention, and stabilizing emulsions, making them valuable additives in various food products. SDF and IDF were extracted from Valencia orange peels through acid treatment, using both conventional and microwave-assisted methods. Their techno-functional properties were evaluated and compared. The results showed that microwave-assisted extraction significantly improved the techno-functional properties compared to conventional extraction. Specifically, the water retention capacity (WRC) increased from 10.71 g/g to 11.94 g/g for SDF and from 6.54 g/g to 8.92 g/g for IDF. The oil retention capacity (ORC) increased from 2.13 g/g to 2.60 g/g for SDF and from 2 g/g to 2.13 g/g for IDF. The swelling capacity (SC) increased from 8.18 g/g to 10.40 g/g for SDF and from 7.66 g/g to 8.94 g/g for IDF. Finally, the glucose absorption capacity (GAC) increased from 2.41 g/g to 3.28 g/g for SDF and from 5.36 g/g to 6.07 g/g for IDF. These results indicate that the microwave-assisted extraction method improves the techno-functional properties of dietary fibers compared to the conventional method.

Keywords: Dietary fiber, microwave, Techno-Functional

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