



DIELECTRIC MONITORING OF MICROWAVE EXTRACTION PROCESSES

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ABSTRACT

Our research investigated the dielectric traceability of microwave and ultrasound intensified extraction processes of plant by-products. For the experiments, we used plant by-products from beetroot, carrot and raspberry, which were extracted in 5% suspensions. The dielectric behaviour of the extracts was investigated in the frequency range 300-2400 MHz using an open-ended coaxial probe. For both the ultrasonic and microwave intensified procedures, the reported energy was 30, 45 and 60 kJ, respectively. Based on our research results, we found that the dielectric constant measured in the frequency range 700-900 MHz is closely related to the yield of total polyphenol and pectin regardless of the feedstock and treatment used, but the method has limitations due to the presence of components that affect the physical structure and the concentration of target components below the limit of detection.

Keywords: microwave, extraction, dielectric properties, dielectric measurements

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