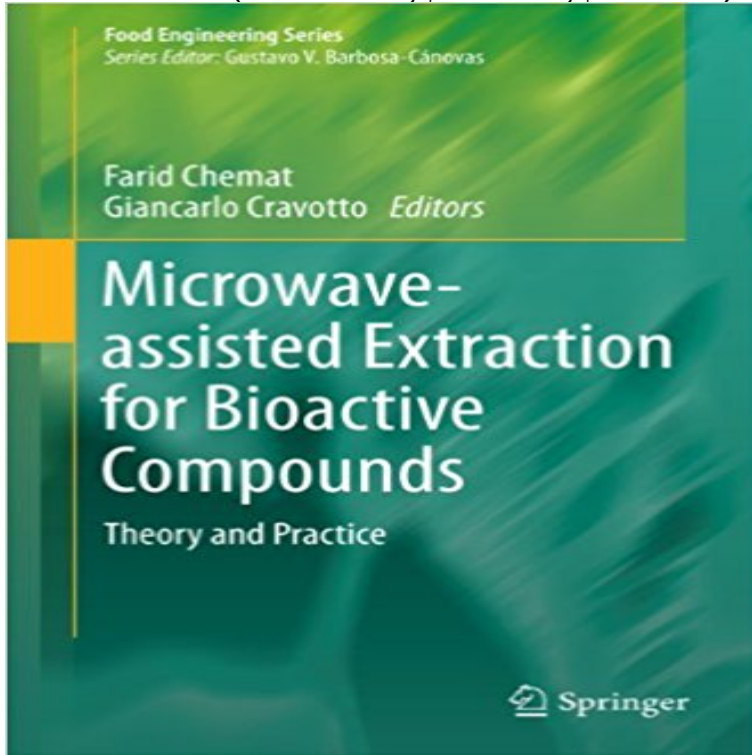


Microwave-assisted Extraction for Bioactive Compounds: Theory and Practice: 4 (Food Engineering Series)



With increasing energy prices and the drive to reduce CO₂ emissions, food industries are challenged to find new technologies in order to reduce energy consumption, to meet legal requirements on emissions, product/process safety and control, and for cost reduction and increased quality as well as functionality. Extraction is one of the promising innovation themes that could contribute to sustainable growth in the chemical and food industries. For example, existing extraction technologies have considerable technological and scientific bottlenecks to overcome, such as often requiring up to 50% of investments in a new plant and more than 70% of total process energy used in food, fine chemicals and pharmaceutical industries. These shortcomings have led to the consideration of the use of new green techniques in extraction, which typically use less solvent and energy, such as microwave extraction. Extraction under extreme or non-classical conditions is currently a dynamically developing area in applied research and industry. Using microwaves, extraction and distillation can now be completed in minutes instead of hours with high reproducibility, reducing the consumption of solvent, simplifying manipulation and work-up, giving higher purity of the final product, eliminating post-treatment of waste water and consuming only a fraction of the energy normally needed for a conventional extraction method. Several classes of compounds such as essential oils, aromas, anti-oxidants, pigments, colours, fats and oils, carbohydrates, and other bioactive compounds have been extracted efficiently from a variety of matrices (mainly animal tissues, food, and plant materials). The advantages of using microwave energy, which is a non-contact heat source, includes more effective heating, faster energy transfer, reduced thermal gradients, selective heating, reduced equipment size, faster response to

process heating control, faster start-up, increased production, and elimination of process steps. This book will present a complete picture of the current knowledge on microwave-assisted extraction (MAE) of bioactive compounds from food and natural products. It will provide the necessary theoretical background and details about extraction by microwaves, including information on the technique, the mechanism, protocols, industrial applications, safety precautions, and environmental impacts.

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strength electromagnetic fields generated by Tesla Many extraction procedures are known with advantages and disadvantages. the most innovative extraction techniques studied in the last time: microwave-assisted extraction in Microwave-assisted Extraction for Bioactive Compounds: Theory and Practice, Food Engineering Series 4, Eds. F. Chemat, **Fundamentals of Microwave Extraction - Springer Link** Chapter. Microwave-assisted Extraction for Bioactive Compounds. Part of the series Food Engineering Series pp 53-68. 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Theory and Practice. Editors: Chemat, Farid, Cravotto, **Optimisation of Microwave-Assisted Extraction of Pomegranate** Microwave-assisted Extraction for Bioactive Compounds: Theory and Practice, Food Engineering Series 4, DOI 10.1007/978-1-46 Microwave-Assisted Extraction for Bioactive Compounds: Theory and for Bioactive Compounds: Theory and Practice (English, Hardcover, Chemat) View 4 sellers starting from ?9030 Series & Set Details Food Engineering Series. **Microwave-Assisted Extraction: An Introduction to - ResearchGate** Chapter. Microwave-assisted Extraction for Bioactive Compounds. Part of the series Food Engineering Series pp 69-101. 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