World Academy of Science, Engineering and Technology
International Journal of Nutrition and Food Engineering
Vol:9, No:07, 2015

Green Chemical Processing in the Teaching Laboratory: A Convenient Solvent Free Microwave Extraction of Natural Products

Authors : Mohamed Amine Ferhat, Mohamed Nadjib Bouhatem, Farid Chemat

Abstract : One of the principal aims of sustainable and green processing development remains the dissemination and teaching of green chemistry to both developed and developing nations. This paper describes one attempt to show that “north-south” collaborations yield innovative sustainable and green technologies which give major benefits for both nations. In this paper we present early results from a solvent free microwave extraction (SFME) of essential oils using fresh orange peel, a byproduct in the production of orange juice. SFME is performed at atmospheric pressure without added any solvent or water. SFME increases essential oil yield and eliminate wastewater treatment. The procedure is appropriate for the teaching laboratory, and allows the students to learn extraction, chromatographic and spectroscopic analysis skills, and are expose to dramatic visual example of rapid, sustainable and green extraction of essential oil, and are introduced to commercially successful sustainable and green chemical processing with microwave energy.

Keywords : essential oil, extraction, green processing, microwave
Conference Title : ICFEM 2015 : International Conference on Food Engineering and Management
Conference Location : Paris, France
Conference Dates : July 20-21, 2015