

11TH EUROPEAN NUTRITION AND DIETETICS CONFERENCE

June 29-July 01, 2017 Madrid, Spain

Valorization of waste from the citrus industry through the extraction of natural dyes

Maria J Esteve, Montero-Calderon A, Cortés C, Zulueta A and Frígola A
University of Valencia, Spain

The legislative framework developed in Spain and Europe establishes as a priority the recycling and recovery of waste and by-products against deletion (European Directive 2006/12/EC). In Spain, 6.5 million tons of citrus fruits are produced annually, 30% goes to industrial use. Of the fruits, citrus processed between the 35 and 55% is by-product. These by-products can be exploited to obtain compounds of added value (fiber, composite bioactive, color). In this way, the by-product is valued and inputs reduced. This study evaluates the extraction of compounds colored skin of the orange and its possible use as coloring natural, using the technology of ultrasonic of easy implementation in the industry food. Ultrasonic-assisted extraction is performed with the Qsonica 500 sonicator. It determines the color of extracts by means of the colorimeter ColorQuest XE (HunterLab). The optimization of the process is done using central composite design using three levels to identify the interaction between experimental factors: ultrasonic power (0-400 W), runtime (5-30 min) and percentage of solvent (0 - 50% ethanol in water). The results show that ultrasonic-assisted extraction allows extracting the highest content of compounds colored without the use of solvents (ethanol). The value of Chroma is 19.0 ± 0.1 when applied a power of 400 W, 5 and 30 min and water as extraction liquid is used. This value of Chroma coincides when grind the sample and extract with a solution of ethanol in water at 50%. In both cases, a value much higher than the one obtained in orange juice (10.8 ± 0.8). The optimum extraction conditions were as follows: power 370 W, extraction time 5 min and ethanol 34% in water.

Biography

Maria J Esteve is an expert in food analysis. She has studied the effect of non-conventional conservation treatments (electrotechnologies, high pressures and ultrasounds) on physicochemical characteristics, nutrients and bioactive compounds of foods of vegetal origin. In her last project she studied the valorization of residues of the food industry with the extraction by non-conventional techniques of bioactive compounds (phenolic compounds, ascorbic acid, carotenes) and colored compounds. She has also studied the possible interactions between the compounds as well as their bioaccessibility and the effect that different technologies can have.

maria.jose.esteve@uv.es

Notes: