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β -cyclodextrin assisted extraction of polyphenols from peach pomace

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Peach byproducts, generated yearly, are disposed as waste despite their content in high-added value molecules. Amongst the latter, polyphenols are bioactive molecules with interesting health-promoting properties. In this study the recovery of polyphenols from peach pomace was conducted by an eco-friendly and cost effective method using a GRAS food additive: β -cyclodextrin (β -CD). The efficiency of β -CD was compared to that of organic solvent (ethanol) extraction at the same concentrations (1%, 2%, 3%, 4% and 5%). Both quantitative and qualitative (antiradical activity) analyses were conducted on the extracted polyphenols. The highest polyphenol (0.72 mg GAE/g DM) and flavonoid (0.35 mg catechin/g of DM) concentrations so as the maximal antiradical activity (6.82 %) were obtained after 2 hours of diffusion at 50°C with an aqueous β -CD (5%) solvent. At the same ethanol concentration (5%), extracts showed lower yields of polyphenols (0.63 mg GAE/g DM) and an inferior antiradical activity. Polyphenol encapsulation in β -CD was thought to protect them from oxidation and degradation. The results clearly show the competitiveness of β -CD assisted extraction to recover a high quantity and quality of polyphenols from peach pomace. This study suggests a green and GRAS process for biomolecule extraction from food byproducts recommending the use of β -CD as an alternative to organic solvents.

Biography

Nada El Darra obtained her BSc in Life and Earth Sciences from Saint-Joseph University, Lebanon in 2007. She earned her MSc in Food Chemistry with Honors from Saint-Joseph University, Lebanon in 2009. Then, she worked as a Quality Manager at Conserves Moderns Chtaura, Lebanon. In 2013, she obtained a certificate entitled "ISO 22000:2005" Food Safety Management System Lead Auditor from RABQSA. She was subsequently awarded a scholarship to pursue her PhD under a joint program between Saint-Joseph University and University of Technology of Compiègne, France. She obtained a PhD in Food Chemistry from Saint-Joseph University (2013) and a PhD in Industrial Process Engineering and Sustainable Development from University of Technology of Compiègne, France. After completing her PhD, she worked in 2014 as a Quality Manager at Abido Spices, Neemeh, Lebanon. She has a number of publications in peer-reviewed journals. In 2014, she was appointed as an Assistant Professor at Nutrition & Dietetics Department, Faculty of Health Sciences, at Beirut Arab University.

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