



BIOAVAILABILITY OF POLYPHENOLS EXTRACTED FROM FRUIT POMACE USING GREEN TECHNOLOGIES

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Abstract

The diversity of polyphenols among fruit pomace was explored using different solvents and extraction technologies, namely microwave assisted extraction (MAE) and pressurized low polarity water (PLPW), that modified the dielectric properties of material, and thus the interaction between solvent-solute. The chemical structure of polyphenols influences their solubility and their ability to cross the physiological barriers in the body. Lipinski's rule of five, Veber's rules and Selby-Pham's pharmaco-kinetic (PK) model were used to evaluate the potential of a polyphenol as a drug. This research proposed a new classification system adapted to polyphenols in general for a comprehensive view of their bioavailability. In this study, artificial membranes (PAMPA) and cellular models (Caco-2) provided knowledge about the absorption of polyphenols through active transport and passive diffusion. This research seeks to identify antioxidant activity among polyphenols using ORAC and bioactivity scores. The extracts were characterized using chromameter, color segmentation, chemometric methods for polyphenol groups and profile by UHPLC-Q-TOF-MS for the selection of optimal extraction conditions of bioactive and bioavailable polyphenols.



About the Candidate

Viviane Bélair holds a B.Sc. degree in Biology from the Université du Québec à Rimouski and a M.Sc. degree in Chemistry from Université Laval. Her Ph.D. project, under the supervision of Professor Valérie Orsat, aimed at identifying high value polyphenols in extracts for the valorization of pomace from the juice industry.