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Adsorption and concentration of antioxidants from an industrial wine making by-product using PVPP

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rape pomace (GP) is a by-product of wine industry and consists mainly of stems, seeds and skins. Correspond to a 20-25% J of the weight of the grape crushed for winemaking. However, in Chile the large quantity of GP produced was dumped and resulted in environmental waste; only a small amount of GP was used as soil fertilizer. Antocyanins, catechins, procyanidins, flavonol glycosides, phenolic acids and stilbenes are the principal phenolic constituents found in GP. The composition of GP and their biological and functional properties postulate to GP as source of functional food ingredient or pharmaceutical compounds. However, the production of purified phenolic extract is usually costly, and organic solvents are usually used. The use of organic solvent generates new environmental problems and health impact on the workers. In this study, we obtained simple ethanolic extracts by milling and maceration of cabernet sauvignon, cabernet franc, cabernet rose, merlot, syrah and Carmenere pomaces. Their PC contents were measured by Folin-Ciocalteu (FC) assay with and without PVPP (polyvinyl polypyrrolidone) adsorption in ethanolic, aqueous and pH controlled solution. The results showed an average adsorption PC of 36.46, 70.66 and 76.30% respectively. We corroborated the anthocyanins and the simple flavonoids adsorption by the analysis of GP HPLC-DAD (high-performance liquid chromatography with diode-array detector) profiles. In addition, for GP extracts their antioxidant capacity by ORAC assay and DPPH were related with the corrected phenolic contribution to experimental total phenolics value. These results point to potential uses of the proposed polymer to concentrate and determine the PC contribution without interference by the FC assay in complex matrices such as antioxidant-containing food products or antioxidant extracts. Acknowledgements to FONDECYT for the project 11140256

Biography

Christian Folch Cano is an academic at the Faculty of Agricultural Engineering at the University of Concepción since 2015. He completed his Ph.D. in Chemistry at the University of Chile. His research interests are in bioactive compounds as antioxidants from natural products, agro-industrial residues and agri-food matrices. In recent years, he has focused on the application of adsorbent polymers to concentrate the antioxidants of industrial vinification wastes.

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