

APPRAISING BLUEBERRY RESIDUES AS A NATURAL SOURCE OF BIOACTIVE COMPOUNDS

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The main solid by-product of the blueberry juice processing is peel, representing up to 20% of the initial fruit weight. Blueberries are considered as a particularly interesting fruit for their well-known antioxidant and antimicrobial properties [1]. It is expected that blueberry peel retains some of the compounds with such interesting properties. However, its excessive accumulation causes a seasonal management and environmental problem. These by-products could be reused, reducing the environmental impact of the industrial activity and obtaining, in parallel, an economical profit.

The main objective of this work was to perform a deep characterization of the blueberry peel residues, and their derived extracts. To obtain extracts rich in bioactive compounds and ready to use in other sectors, environmentally friendly procedures, namely matrix solid-phase dispersion (MSPD) and Medium-scale Ambient Temperature Systems (MSATs) [2], were employed. Physical, mechanical, and chemical characteristics of the raw material (blueberry), as well as the total polyphenolic content (TPC), antioxidant capacity and sugars content of the corresponding by-products and derived extracts were assessed, obtaining high values. Liquid chromatography-tandem mass spectrometry (LC-MS/MS) was employed to quantify individual phenolic compounds. Results revealed that anthocyanins were the most abundant polyphenolic group of compounds in the blueberry peel extracts reaching concentrations up to 6899 $\mu\text{g g}^{-1}\text{dw}$, followed by flavonols, especially quercetin and its derivatives (quercetin-3-glucoside, quercetin-3-rutinoside). Other non-flavonoids, such as hydroxycinnamic acids including caffeic and chlorogenic, were also found at high concentration levels (1226 $\mu\text{g g}^{-1}\text{dw}$) in the obtained extracts.

The ultimate goal of this work is investigating the utility of food processing wastes as raw materials to obtain extracts with added value to be used in new products with beneficial health properties.

References:

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