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Characterization and classification of apple cultivars based on triterpenoids acids, phenolic constituents and bioactive properties

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Apple (*Malus domestica* Borkh.), a popular and widely cultivated fruit world-wide, contains active phytochemicals including phenolic compounds and triterpenoids responsible for their health benefits. Here we report the results obtained for the concentration of two major triterpenes (oleanolic and ursolic acids), phenolic, flavan-3-ols, flavonoids and bioactive properties of different apple cultivars from different geographical regions and classification using chemometric analysis. Quantification of bioactive compounds from apples was carried out by HPLC-PDA after an appropriate extraction method. Total polyphenols, total flavonoids and antioxidant activity were recorded by spectrophotometric measurements. Our results demonstrated that the investigated bioactive compounds and bioactive properties vary considerably depending on the apple cultivars. Catechin, epicatechin, chlorogenic acid and rutin were the most important identified phenolic acids in apples (flesh and peel), while ursolic and oleanolic acids were abundant in apple peel. There were significant linear correlations between phenolic content and antioxidant activity of extracts in the reaction with DPPH• (1, 1-diphenyl-2-picrylhydrazyl). A linear discriminant analysis model was constructed to classify apples according to the cultivar and to distinguish between different sample locations. Therefore, the present methodology based on apple active phytochemicals fingerprinting and bioactive properties in conjunction with a comprehensive database and chemometric methods presents a high potential for apple classification.

Biography

Elisabeta-Irina Geana has completed her PhD in 2015 at Bucharest University. Her main current interests are identification and quantification of essential active principles like phenolic compounds, organic acids, amino acids, terpenes, micro and macronutrients in different food matrices (wine, honey, fruits, plants, organic products, functional foods) by highlighting key biomarkers used in authentication, using the main instrumental analytical (HPLC, UV-VIS, ICP-MS). She has published 16 ISI articles, 10 of them as first author and has 145 citations.

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