Title Phenolic composition and free radical scavenging activity of different apple varieties in relation to the cultivar, tissue type and storage

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Abstract

The aim of this research was to evaluate the influence of genotype, tissuetype and cold storage on the bioactive compounds content and on the antiradical activity (AA) of differentapplecultivars (Golden cl. B, Fuji cl. Kiku8, Braeburn cl. Hillwell). The content of analysed phyto-compounds depended on the clone, on the part of fruit, and to a minor extent, on the storage. For EC_{50} data, the cultivar represented the main source of variation and the interaction with the type of tissue, was significant. The AA of apples, measured by means of the DPPH test, was highly correlated to the flavan-3-ols content, which represents a good predictor of the apple antiradical power. The new Braeburn's clone, the Hillwell, had the worst AA related to a minor phyto-chemical content. Also, its phenolic content was dramatically reduced after cold storage (flesh: −50%; peels: −20%; $p < 0.05$). Obtained results underlined the key role of the genotype on the content of the nutraceutical power of apples, which is important to improve their quality and consumption benefits, suggesting to the breeders to pay more attention to the potential healthy compounds in the development of new hybrids.