

Polyphenolic compounds and antioxidant activity of new and old apple varieties.

J Agric Food Chem. 2008 Aug 13;56(15):6520-30. Epub 2008 Jul 9

[Wojdyło A](#), [Oszmiański J](#), [Laskowski P](#).

Department of Fruit and Vegetable Technology, Wrocław Environmental and Life Science University, 25 Norwida Street, 50-375 Wrocław, Poland.

aneta@wnoz.up.wroc.pl

There is considerable evidence to show that a greater intake of apple contributes to improved health by reducing the risk of diseases, such as cardiovascular disease and some forms of cancer. Apple fruit is a major source of phenol compounds, because its consumption is widespread in many countries and it is available on the market for the whole year. The phenolic composition of 67 varieties of apple cultivars (new and old varieties) was examined for the concentration of some important phytochemicals and antioxidant activity. For the first time, we have looked at the correlation and compared polyphenolic compounds in Golden Delicious variety and new varieties grown from it. Up to 18 compounds, including catechin, procyanidin, hydroxycinnamates, flavonols, anthocyanins, and dihydrochalcones, were analyzed by high-performance liquid chromatography with diode array detection analysis of crude extracts and after thiolysis and LC-MS. The mean content of total polyphenols lay between 523.02 and 2723.96 mg/100 g dw and depending upon the apples variety. Flavanols (catechin and oligomeric procyanidins) are the major class of apple polyphenols, representing more than 80%, followed by hydroxycinnamic acids (1-31%), flavonols (2-10%), dihydrochalcones (0.5-5%), and in red apples, anthocyanins (1%). In this study, the best correlation was found for the total polyphenols and ABTS method, with a lower correlation for FRAP and DPPH methods ($r = 0.871$, 0.839 , and 0.804 , respectively). The presented data clearly demonstrated that new varieties, i.e., Ozark Gold, Julyred, and Jester, of apple had the same or higher value of bioactive compounds in comparison to the old varieties, i.e., Golden Delicious, Idared, and Jonagold.