Major phytochemicals in apple cultivars: contribution to peroxyl radical trapping efficiency.

J Agric Food Chem. 2005 May 4;53(9):3377-82
Vanzani P, Rossetto M, Rigo A, Vrhovsek U, Mattivi F, D'Amato E, Scarpa M.
Dipartimento di Chimica Biologica, Università di Padova, via G. Colombo 3, 35121 Padova, Italy.

Forty-one samples of apples (peel plus pulp), obtained from eight cultivars, were examined for concentration of some important phytochemicals and for antioxidant activity expressed as peroxyl radical trapping efficiency. Five major polyphenolic groups plus ascorbate were identified and quantified by HPLC in the apple varieties. Oligomeric and polymeric proanthocyanidins were found to be about two-thirds of total polyphenols. The antioxidant efficiency of the apple extracts and of representative pure compounds for each group of phytochemicals was measured in a micellar system mimicking lipid peroxidation in human plasma. Although the amount of polyphenols measured by HPLC is similar to that measured by standard methods, the antioxidant efficiency calculated on the basis of the contribution of the pure compounds was lower than the antioxidant efficiency of the apple extracts. The higher efficiency of apples appears to be strictly related to the overwhelming presence of oligomeric proanthocyanidins.