

Abstract

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Title of Diploma Thesis: Evaluation of phenolic compounds content in fruits

This diploma thesis is focused on the analysis of selected phenolic compounds (gallic acid, chlorogenic acid, epicatechin, rutin, quercitrin, phloridzin and phloretin). The content of these phenolic substances was evaluated in ten selected varieties of apples using an optimized HPLC method.

A general description of phenolic substances is included in the thesis. Further, the thesis contains a short review of scientific publications devoted to the content of phenolic substances in fruits and a short description of the HPLC method for determination of phenolic substances.

HPLC analysis was performed on the guard column Ascentis Express C18 (5 x 4.6 mm x 5 μ m), and separation columns Kinetex C18 (150 x 4.6 mm x 5 μ m) with core-shell particles and Luna Omega Polar C18 column (150 x 4.6 mm x 5 μ m) with fully porous particles. Detection was performed by a UV detector at wavelengths of 255, 280, 320 and 365 nm. The injected volume was 10 μ l and a flow rate of 1 ml/min at column temperature of 30 °C was used. A gradient elution of the mobile phase was applied starting at 95 % aqueous component acidified to pH 2.8 with acetic acid and 5 % acetonitrile, total analysis time was 18 min.

The levels of phenolic compounds were determined and evaluated in the original plant material and after 3, 5 and 7 months of storage in cool and ultralow oxygen conditions (ULO storage). Extracts of homogenized apples in methanol with 0.1 % acetic acid to keep the stability of phenolic compounds were analyzed. Differences between varieties are significant both in the original plant material and during storage. The obtained concentrations of phenolic compounds can be used to distinguish the quality of the concerned varieties.