

ABSTRACT

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Title of Diploma Thesis: Analysis of nutritionally important substances in fruit tree waste products by HPLC

This diploma thesis deals with the content of phenolic compounds in various parts of tree of the genus *Pyrus*. The theoretical part is focused on characterization, biosynthesis, chemical and biological properties of major phenolic compounds in pear-trees and the possibilities of their determination with the use of the latest scientific studies. The experimental part contains an extensive analysis of arbutin, chlorogenic acid, 1,5- dicaffeoylquinic acid, 3,5- dicaffeoylquinic acid and rutin in extracts of leaves, bark, buds, fruits, flowers and wood chip. Developed and validated HPLC-DAD method was used and the total antioxidant activity was determined by FIA method with electrochemical detection.

An ASCENTIS Express RP-Amide 150×4.6 mm, 2.7 μm analytical column and gradient elution consisting of organic part of acetonitrile (ACN) and water part with 0,85% phosphoric acid (pH = 2.2) were used for analysis. The detection was performed by DAD detector at wavelengths 220 nm, 327 nm and 354 nm. The temperature of column oven was 30 °C, injection volume was 1 μl (5 μl for fruit) and flow rate of mobile phase 1 ml/min.

The content of phenolic compounds in 111 samples of 10 different cultivars in three terms was determined. The content of phenolic compounds was higher in waste products than in fruits. Arbutin and chlorogenic acid were dominant phenolic compounds.