

ABSTRACT

Charles University, Faculty of Pharmacy in Hradec Králové

Department of Analytical Chemistry

Candidate: RNDr. Aneta Bílková

Supervisor: assoc. prof. PharmDr. Hana Sklenářová, Ph.D.

Consultant: assoc. prof. PharmDr. Petr Chocholouš, Ph.D.

Title: Application of separation methods for determination of biologically active substances

The submitted dissertation thesis presents an annotated set of three publications, focusing on the application of separation methods for the determination of biologically active phenolic substances, pesticide residues in fruits, with regard to the use of modern storage technologies, and the application result - a utility model based again on monitoring the phenolic substances content with respect to different conditions of plant material drying.

In the theoretical part, the target analytes are characterized from an analytical point of view, with respect to their physico-chemical properties, stability, antioxidant activity. It also describes sample preparation methods for the determination of biologically active phenolic substances, selected extraction procedures and an overview of the methods used for the determination of the described substances in plant material.

The main part of the dissertation deals with the development, optimization and validation of a rapid analytical method for the chromatographic analysis of phenolic substances in plant material, specifically in apples. This part describes the optimization of the final method, the development of the chromatographic method itself and its application to selected samples where the developed method was verified. Another extensive part is the study of the influence of application of different storage technologies (modified atmosphere packing - MAP, refrigerated storage, storage in conditions with a low oxygen level - ULO), post-harvest treatments (application of ozone, the active substance 1-methylcyclopropene) and determination of the content of monitored analytes during the storage of apple fruits. The next part of this dissertation follows on the application of long-term storage conditions and its effect on the degradation of residues of active pesticide substances in cherries.

At the end of the dissertation thesis, there is an overview of publications in reviewed journals without IF focusing on the fruit growing, certified methodologies and presentations of the results of experimental work at national and international conferences.