

ABSTRACT

This diploma thesis deals with the determination of selected antioxidants, namely rosmarinic acid, caffeic acid, cinnamic acid and *t*-4-hydroxycinnamic acid in aqueous and ethanolic extracts from *Melissa officinalis*. The aim of the work was to find out whether the above-mentioned antioxidants were present in the extracts prepared at home. A new UHPLC method with UV and MS detection was developed to monitor the content of rosmarinic acid, caffeic acid, cinnamic acid and *t*-4-hydroxycinnamic acid in the extracts. A BEH C18 column (2,1 mm × 100 mm, particle size 1,7 µm) was selected for separation, the mobile phase consisted of methanol (component A) and 0.1% aqueous formic acid solution at pH 2.6 (component B), the ratio of components being changed according to the gradient program. The method was validated and repeatability, limits of detection and limits of quantification, linearity, yield and robustness were determined after optimization. Analysis of 20 aqueous and 20 ethanolic extracts was performed differing in extraction time, type of solvent and lighting conditions. Based on the comparison of retention time and MS detection, the presence of 3 of 4 selected phenolic acids was confirmed, namely rosmarinic acid, caffeic acid and cinnamic acid in ethanolic extracts. Unfortunately, the presence of acids could not be detected in the aqueous extracts. To verify the method analysis of three selected commercially available teas was performed. The presence of two acids with antioxidant properties was confirmed, namely rosmarinic acid and caffeic acid.

Keywords: *Melissa officinalis*, antioxidants, UHPLC-MS, extraction