

PhD dissertation title: Thin-layer chromatography application into selected plant pigments analysis

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The doctoral dissertation is divided into two parts: theoretical and experimental. In the theoretical part, primary and secondary plant metabolites are discussed and individual groups of phytochemical compounds are characterized. The following chapters are devoted to the compounds from the group of anthocyanins, betacyanins and neolignans. The experimental part includes descriptions of the research and analyses carried out using thin-layer chromatography (TLC and HPTLC methods), scanning densitometry, UV-Vis spectrophotometry and mass spectrometry (TLC-MS). The aim of the study was to develop new conditions for the chromatographic separation of compounds, as well as to apply the method for their qualitative and quantitative determination. The first stage is focused on the analysis of selected anthocyanins: cyanin, keracyanin, delphinidin and pelargonidin. In addition, a method of triple chromatographic development for the separation of anthocyanins was carried out. The tested compounds were determined in food samples. The next stage of research focuses on betacyanins, including betanin. Horizontal separation of betacyanin pigments was observed during the chromatographic analysis, which is a "fingerprint" of those compounds. The last part of the experimental concerns compounds from the group of neolignans: magnolol and honokiol, which were determined in samples of dietary supplements, and their antioxidant and antibacterial properties were examined.