

ABSTRACT

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Title of the diploma thesis: HPLC in quality control of food supplements based on goldenrod and containing rutin and chlorogenic acid

In this diploma thesis, a high-performance liquid chromatography (HPLC) method was developed and validated for the separation and determination of chlorogenic acid, 3,5-dicaffeoylquinic acid, rutin, quercetin, and kaempferol. This method was applied to the analysis of food supplements based on goldenrod: drops Celík zlatobýl (Valdemar Grešík), Celík obecný BIO (Bylinné kapky), Celík obecný (Bylinné kapky), Zlatobýl (Green Idea), Zlatobýl – tinktura z pupenů (Serafin), Zlatobýl – tinktura z bylin (Serafin), Zlatobýlová směs (Dědek kořenář), Zlatobýl (Inca Botanica), and capsules Celík (Ex Herbis). Furthermore, two food supplements containing rutin (Solgar and Walmark®) and a food supplement Zelená káva (Botanic) containing chlorogenic acid were analyzed.

An Ascentis® Express 90 Å AQ-C18 150 × 4.6 mm column with 2.7 μm particles was selected for analysis. A gradient elution with a mobile phase of acetonitrile/0.085% phosphoric acid was used. Detection was performed with a diode array detector at wavelengths of 325 nm (chlorogenic acid, 3,5-dicaffeoylquinic acid) and 360 nm (rutin, quercetin, and kaempferol). The analysis was carried out at a temperature of 30 °C and a flow rate of the mobile phase of 1.0 ml/min.

Keywords: HPLC, goldenrod, rutin, chlorogenic acid, 3,5-dicaffeoylquinic acid, quercetin, kaempferol, food supplements