Abstract

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Title of the diploma thesis: Control of mycotoxin content in food supplements

Due to the growing popularity of nutraceuticals, some concerns about their quality and safety have been expressed. The presented work describes the development of a fast method for mycotoxin ochratoxin A (OTA) determination using high performance liquid chromatography (HPLC) and column switching technique in combination with on-line solid phase extraction (SPE). The method was used for direct determination of OTA in milk thistle-based nutraceuticals. Nutraceuticals were extracted by methanol – water solution in a ratio of 1:9. A volume of 50 µl of the extracted sample was injected on the extraction column Ascentis Express RP-Amide (5 x 2.1 mm, 5 µm particle size). The sample was cleaned from interfering compounds with 20% methanol at a flow rate of 1 ml/min. After a period of 1 minute the valve was switched and mobile phase eluted OTA trapped on the extraction column to the analytical column. Separation was performed by gradient elution on the Ascentis Express Phenyl-Hexyl (100 x 4.6 mm, 5 µm particle size) column using a mobile phase consisting of acetonitrile/0.5% acetic acid at a flow rate of 1 ml/min. OTA was quantified by fluorescence detection at wavelengths Ex 335 nm, Em 460 nm. The total run time including on-line extraction and separation step was 9 min. The method quantification limit was 1 µg/l for food supplements in form of tablets/capsules and 0.5 µg/l for supplements in form of drops.

Keywords: HPLC, on-line SPE, ochratoxin A, milk thistle