Abstract

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Title of thesis: Development of LC-MS method for determination of selected endocrine disruptors

The thesis is focused on the development and optimization of LC-MS method for the determination of twelve endocrine disruptors in amniotic fluid of pregnant women in the third trimestr of pregnancy. There is a suspision that premature births are connected with an increased incidence of endocrine disruptors in amniotic fluid.

The analytes were extracted by liquid-liqud extraction with 4-methylpentan-2-on. The analytical method is based on using reverse phase high-performance liquid chromatography with Hypersil C4 GOLD column (2.1 × 100 mm, particles 1.9 μm). For analysis the gradient elution with the mobile phase A (0.5% *(v/v)* formic acid aqueous solution) and B (0.5% *(v/v)* formic acid solution in acetonitrile) at a flow rate of 0.5 ml/min, injection 5 μl and column oven temperature 35 °C was used. The high-resolution mass spectrometer Orbitrap Q Exative Plus with atmospheric pressure chemical ionization in positive mode was used to identify and determine the response of individual analytes.

Then the optimized method was used to test the release of endocrine disruptors from laboratory equipment. The test confirmed that methylparaben and bis(2-ethylhexyl)-phthalate were released from pipette tips and methylparabe, bis(2-ethylhexyl)-phthalate and diisonyl phthalate from eppendorf test tubes.