

Enantioselective analysis of N-ethylpentedrone and its phase 1 metabolites using supercritical fluid chromatography tandem mass spectrometry (SFC-MS/MS)

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The aim of the present study was to develop an enantioselective method for analysis of N-ethylpentedrone and its phase-1 metabolites based on supercritical fluid chromatography-tandem mass spectrometry (SFC-MS/MS).

Currently the number of new psychoactive substances is constantly increasing. Most of them are synthetic compounds. Several studies reported their enantiomers having different pharmacological and toxicological properties. Accordingly, the role of enantioselective analysis in forensic examination is becoming increasingly important. In our work, the substance used for the experiment, N-ethylpentedrone, belongs to this group.

After analyzing the results of the initial screening, we decided to use the Lux Amylose-3 chiral column and the mobile phase consisting of methanol, isopropanol, and water in a volumetric ratio of 10:10:80 (30 % in total) and with carbon dioxide at 70% (v/v).

We studied the pharmacokinetic profile of N-ethylpentedrone in volunteer's samples, performed identification of phase-1 metabolites, and quantitatively determined the content of the studied substance. Regarding the enantiomeric separation of metabolites, several mobile and stationary phases were used, which was necessary in this case.

Based on our results, supercritical fluid chromatography-tandem mass spectrometry is suitable technique for both, qualitative and quantitative analysis of N-ethylpentedrone, as well as the separation of its phase-1 metabolites' enantiomers and stereoisomers.