

Enantioselective analysis of 3-4methylenedioxymethamphetamine (MDMA) and its phase-1 metabolites, supercritical fluid chromatography coupled with tandem mass spectrometry (SFC-MS/MS).

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The aim of this study was the enantioselective analysis of 3,4-methylenedioxymethamphetamine (MDMA) and its phase-I metabolites in human saliva samples using supercritical fluid chromatography coupled with tandem mass spectrometry (SFC-MS/MS).

Currently, there is a growing increase in the prevalence of illicit drugs and pharmaceutical substances. Enantiomers of some chiral narcotic substances may exhibit significantly different pharmacological and toxic properties. Therefore, enantioselective analysis is of great importance. SFC-MS/MS effectively meets the demands of enantiomeric analyses and enables the identification of foreign substances that have entered the human body. The substance used in this study for the experiment is 3,4-methylenedioxymethamphetamine (MDMA).

First, based on screening results, we selected Lux Cellulose-4 as the stationary phase, and used a mobile phase composed of methanol and acetonitrile in a 20:80 volume ratio, with an addition of 0.1% ammonium hydroxide in 70% CO₂.

Under these conditions, we studied the pharmacokinetic profile of patient samples and also performed identification of phase-I metabolites. Based on the results, it can be concluded that the enantioselective analysis of MDMA and its phase-I metabolites in samples is possible using SFC-MS/MS.