

Enantioselective analysis of 4-chloro-methcathinone(4-CMC) and its pahase-1 metabolities using supercritical fluid chromatography

tandem mass spectrometry (SFC-MS-MS)

Tatia Kelenjeridze

Email: tatia.kelenjeridze678@ens.tsu.edu.ge

Department of Chemistry, Faculty of Exact and Natural Sciences

Ivane Javakhishvili Tbilisi State University

3, I. Chavchavadze Avenue, Tbilisi, 0179, Georgia

Synthetic cathinones belong to a group of narcotic substances that have attracted significant attention in recent years from both law enforcement agencies and the fields of clinical and analytical toxicology. One of the notable representatives of this group is 4-chloromethcathinone (4-CMC), a structural analogue of β -keto-phenethylamines, which exhibits strong psychostimulant effects. Its biological activity, metabolic fate, and toxicological profile are subjects of active research in modern drug analysis.

In modern chemistry, supercritical fluid chromatography combined with tandem mass spectrometry (SFC-MS/MS) is considered one of the most effective tools for enantiomeric separation. This technique offers high selectivity, short analysis time and environmentally friendly conditions compared to traditional liquid chromatography.

The aim of this study was the enantioselective analysis of 4-chloromethcathinone and its phase-I metabolites using supercritical fluid chromatography coupled with tandem mass spectrometry (SFC-MS/MS), which contributes to a better understanding of their biotransformation processes and the improvement of analytical methods for toxicological investigations.

