COMPARISON OF LIQUID LIQUID EXTRACTION (LLE) TO SAMPLE DERIVATISATION FOR THE ANALYSIS AND QUANTIFICATION OF AMPHETAMINE TYPE STIMULANT (ATS) BY GAS CHROMATOGRAPHY COUPLED TO MASS SPECTROSCOPY

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The fight of synthetic illicit drug (ATS) traffic is in continuous update and one of the most recent initiatives is the monitoring of the ATS precursors in order to prevent the ATS manufacturing. A contribution to this fight is furnished by the European project DIRAC (rapid screening and identification of illegal drug by IR Absorption spectroscopy and gas chromatography) which aims at developing a new advanced sensor for detecting ATS drugs and their precursors.
The compounds used in the presented research study are the three principal ATS compounds, MDMA (3,4-methylendioxymethylamphetamine), Methamphetamine and Amphetamine as well as their main precursors: ephedrine, pseudoephedrine, norephedrine, norpseudoephedrine.
One task of the project is dedicated to the development of a simple and reliable analytical methodology to identify and quantify these substances.
GC-MS has been selected as the reference method considering it's potential to analyse this kind of compounds. However analytes that are present in a salt form need a sample treatment before to be injected.
In the presented results two sample preparation methods are investigated and compared for such analytes. The first consists in the use of a derivatising agent which transforms the salt compound into a product more suitable to be injected. Unfortunately this procedure is not ideal for quantification purposes.
The second method relies on transformation of the salt compound into its corresponding basic form following an extraction with an organic solvent (LLE). This technique provides good quantification results however is not the ideal procedure for a complete screening of street samples seizures.
The results demonstrate the complementarity and the comparability of the two techniques as well as the added value of combing the information.

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