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### Analysis by fast GC-MS of cocaine and minor alkaloids: an added value for law enforcement



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The present work is focused on the optimization and validation of the analytical methods by fast-GC-MS for the determination of cocaine and identification of minor alkaloids and most common cutting agents in powders seized by the law enforcement. Optimization procedure was a deal between the sensibility, signal saturation and time analysis for the identification of minor alkaloids in the presence of a large amount of substances as it occurs in some real cases. Injection temperature and volume, split ratio as well as the temperature ramp for the separation were the optimized instrumental variables. The validation was performed using inter-laboratory samples of cocaine. For this purpose, the accuracy profile procedure was applied in order to evaluate the capability of the method to quantify samples with a known accuracy and a fixed risk at 5%. The analytical method was accredited by the Swiss Accreditation Service (SAS) according to the UNE-EN ISO/IEC 17025:2005 guidelines. The method is used as a routine analysis in the forensic laboratory and allows not only the quantification of cocaine but also the profiling analysis of the minor alkaloids in less than 6 min per run. The profiling study provides information as an added value to the law enforcement, since it provides information about links among cocaine street samples using Pearson correlation coefficients, principal components analysis (PCA) and hierarchical cluster analysis (HCA).

#### Biography

Juan García-Góngora obtained his PhD in analytical chemistry (University of Basque Country, Spain), with the work titled Spectroscopic Techniques Applied to Quality Control of inorganic Fluorinated Compounds, under the supervision of Pf Rosa M. Alonso, mention: Summa cum Laude. In 2009, he obtained a fellowship to develop a two years post-doctoral research about residual solvent analysis in cocaine street samples, at the Faculty of Law and Criminal Justice (University of Lausanne, Switzerland). After that, Juan García-Góngora started working as a drug expert till present, reporting caseworks for the tribunal of justice from different Cantons. He had the opportunity of collaborations with private institutions like fluorine industry DDF, SA and Aeronautical Industry ITP, SA, as well as with public institutions (academia and tribunal of justice). Juan García-Góngora have participated in 7 projects cofounded by academic and private entities. He have 8 peer-reviewed articles and 3 in draft, and presented 18 research presentations at international scientific meetings: 4 oral presentations and 14 poster presentations.

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