
Poster

[P26-10] P26-10: Assay of toxicants

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[P26-10-10] Automatic, simultaneous and rapid analysis of 22 drugs of abuse in saliva by on line SPE and UHPLC-MS/MS

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Background

The drugs quantification of abuse in saliva offers information on the state of individual consumption by non-invasive and easy sample collection. Narcotic substances are detected in saliva from four different drugs family. Nevertheless, the concentrations of these drugs in saliva are lower than those found in blood or urine. Moreover, this analysis is based on the detection of parent compounds and not metabolites. Therefore, the analysis must be performed within 24 hours. So, it is necessary to use a very sensitive and rapid analysis method.

The objective is to have a robust and automatic analytical method allowing the analysis of all these substances for hundred samples per day.

Methods

The developed method enables to quantify the following compounds: Cannabinoids: THC, THC-COOH, 11-(OH) THC, Cocaine-: Cocaine, Benzoylecgonine, Ecgonine methyl, cocaethylene.

Opiates: Heroin, Morphine, 6-MAM, codeine, Pholcodine, Ethyl morphine, methadone.

Amphetamines and other: Amphetamine, Méthampétamine, 3,4-methylenedioxyamphetamine, 3,4-methylenedioxymethamphetamine, 3,4-methylenedioxy-Néthylamphétamine, Mephedrone, Ephedrine, methylenedioxypropylamphetamine.

The analysis of these drugs was made for saliva sample pretreated with a buffer solution. It was injected on on-line SPE coupled to UHPLC-MS / MS. The method implementation allows to quantify the 22 targeted compounds in 15 minutes using internal calibration. The cleaning of the injector and SPE column are included in this cycle time.

Results

Thus, LLOQ between 0.05 and 1 ng / mL were obtained for this compounds in saliva. The regression coefficients obtained on the calibration curves are 0.99 between the LLOQ and 500 ng / mL. The coefficient of variation calculated on 10 injections is less than 15%.

The developed method can quantify various drugs of abuse automatically through an online sample preparation. Moreover, it allows to analyze 22 compounds in a single run, which generates a huge saving of time. The washes of the injector and SPE column included in the 15 minutes run guarantee a lack of carry-over and ensure the robustness of the method.

Conclusions

A Rapid and automated method to quantitatively screen a large panel of drug of abuse in saliva was set up. It offers fit-for-purpose sensitivity in a convenient matrix for on field drug screening.

