Stability study of psychotropic drugs in saliva

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Introduction

According to the *Belgian Royal Decree* (B.R.D.), saliva can be used for the quantification of psychotropic drugs in the context of driving under the influence (DUI) of drugs (B.R.D. 30 November 2015 – 1st Chapter, 1st section: article 5 and article 7).

Storage condition:

- After collection by the police : between 2 - 8°C;
- After determination by the laboratory : - 18°C or below for six months.

Salivette®

Aim of the Study

The aim of the project was to study the stability of Δ-9-tétrahydrocannabinol (THC), 6-monoacetylmorphine (6-MAM), morphine, amphetamine, MDMA, cocaine and benzoylecgonine in saliva after storage in fridge (2-8°C) and in freezer (-20°C) during six months, as required by the Belgian Royal Decree.

Material and Methods

Saliva samples spiked with THC, 6-MAM, morphine, amphetamine, MDMA, cocaine and benzoylecgonine were stored at +4°C and -20°C after addition of storage buffer during six months.

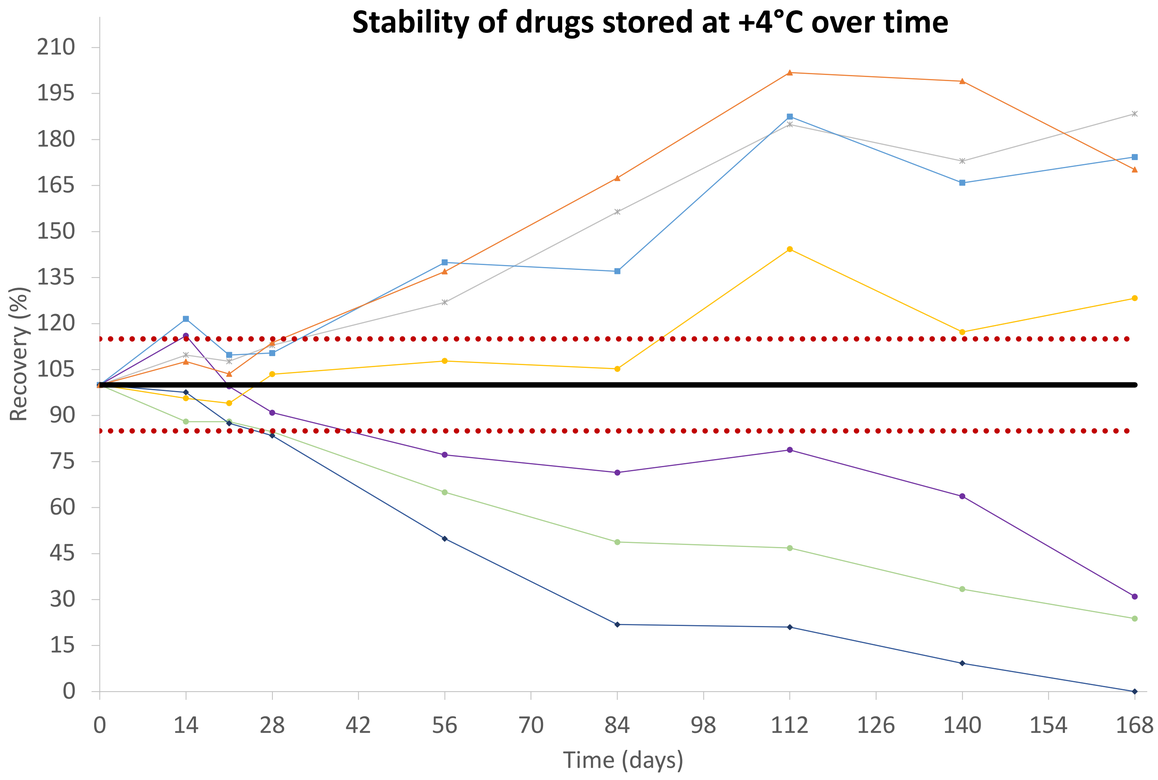
Samples were analyzed by LC-MS/MS in quintuplate each week during 4 weeks and each month until the end of the study.

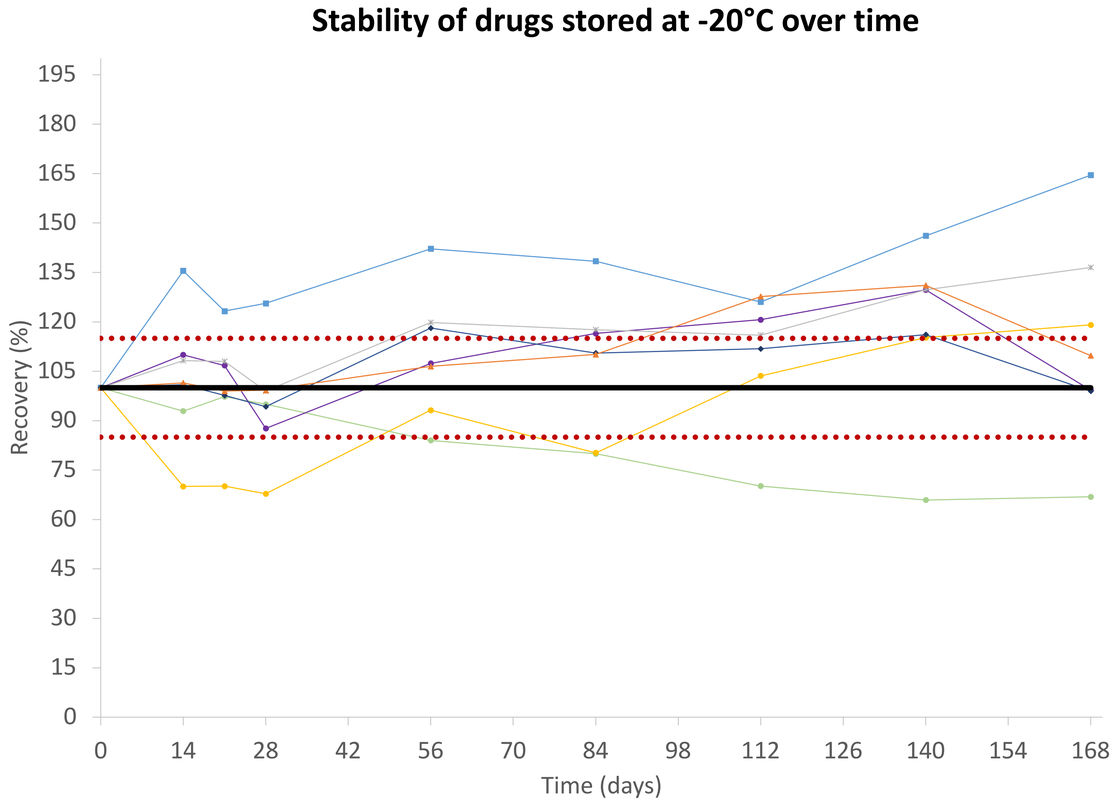
Analytes were considered as stable when the bias between the mean concentration of the quintuplates and the mean value obtained at day 0 was lower than 15%.

UHPLC Acquity®, Waters

Results

Drugs	Stability at 2-8°C	Stability at -20°C
THC	21 days	28 days
6-MAM	28 days	21 days
Morphine	28 days	28 days
Amphetamine	28 days	< 14 days
MDMA	14 days	< 14 days
Cocaine	21 days	28 days
Benzoylecgonine	28 days	28 days





Conclusions

This stability study demonstrated that the storage temperature of samples and time before analysis could have an impact on the results that will be returned to the magistrate. Nevertheless, degradation of 6-MAM in morphine and cocaine in benzoylecgonine allows to keep a right interpretation for these molecules whereas it is not the case for THC, amphetamine and MDMA.