

series	cap color	membrane	pore size	part #
eXtremelFV®	●	PVDF	0.2µm	85531

eXtremelFV® Extraction for the Detection of 11 Antidepressants in Oral Fluid Samples

Sarah Muller¹, Jill Yeakey¹, Lisa Wanders²

¹Lehigh Valley Toxicology, Bethlehem, PA

²Thomson Solutions At Work™, Oceanside, CA

Presented at SOFT 2016

Introduction

The use of oral fluid has recently become more prevalent in drug testing laboratories. The benefits of using oral fluid as a biological matrix include the ability to detect recent drug use, ease of collection, and the collection process can be observed to prevent adulteration of the sample. Many laboratories currently use solid phase extraction techniques to detect drugs and metabolites in oral fluid, however this extraction technique is laborious, expensive, and time consuming. A new, efficient technique has been introduced which optimizes the extraction process by reducing waste and amount of time spent extracting samples. Thomson eXtremelFV®s provide a simple and efficient extraction technique that has demonstrated adequate analyte recovery, reduced matrix interferences and the elimination of solvent waste and other consumables. This project specifically explores the efficacy of these vials in extracting a wide range of antidepressants in oral fluid specimens.

Method:

- Oral fluid sample collected using OraSure Intercept I2he collection device.
 - Place swab under tongue and hold until tab changes from white to a blue (approximately 3-4 minutes and for a maximum of 15 mins).
 - Slide swab into collection vial and screw on cap.
- Break tab on end of collection vial, and place into test tube.
- Centrifuge samples to pull diluted sample into test tube.
- Aliquot 100 µL sample, calibrator or control into eXtremelFV® shells.
- Add 100 µL of mobile phase to outer shell vial.
- Add 20 µL of internal standard to outer shell vial.
- Place plunger filter into outer shell vial and press slowly and firmly until cap is secured in place.
- Vortex samples and inspect samples to assure no bubbles are present.
- Place sample onto instrumentation to be analyzed via LC-MS/MS.

Results:

Table 1 lists the 11 Antidepressants and retention times in Oral Fluid Samples. Fig 1 shows adequate chromatographic separation of all tested analytes was achieved while still attaining optimal sensitivity. Fig 2 Calibration range was established between 5 ng/mL to 200 ng/mL for each analyte. Controls sufficiently passed quantitatively and qualitatively within established ranges of targeted values (15 and 150 ng/mL respectively). To obtain the undiluted concentration of analyte in the sample, values were multiplied by a factor of three.

135 patient samples were analyzed, 38 were positive for antidepressants and their metabolites, see Table 2. These results were consistent with the provided medication lists. Samples were also simultaneously analyzed for opioids, benzodiazepines, barbiturates and drugs of abuse, see Fig 3.

Table 1. Antidepressants that were validated in this method.

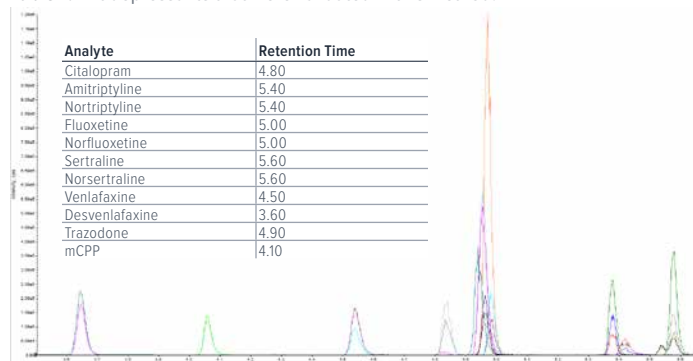


Fig 1. Chromatographic separation of the antidepressants in the method.

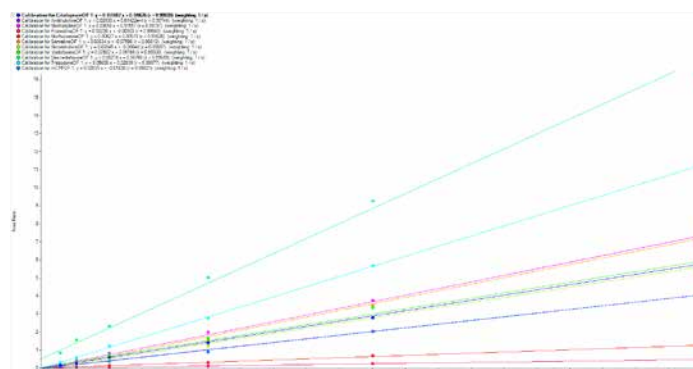


Fig 2. Calibration Curves.

Table 2. Positive results found in 135 Oral Fluid patient samples

Analyte/ Metabolite	Positives
Citalopram	8
Trazodone	7
mCPP	5
Sertraline	2
Norsertaline	3
Venlafaxine	5
Desvenlafaxine	4
Amitriptyline	1
Nortriptyline	1
Fluoxetine	1
Norfluoxetine	1

Positive Results by Drug Class

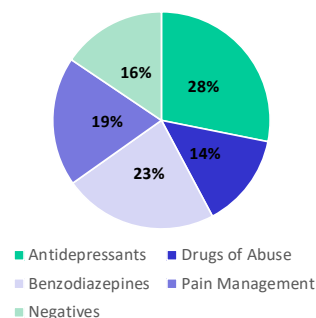


Fig 3. Positive results in Patient Oral Fluid Samples by Drug Class.

Conclusion:

The developed method utilizing the eXtremelFV's® proved successful in extracting and detecting antidepressants and metabolites present in oral fluid with a high level of sensitivity and accuracy. A simple, rapid, and accurate comprehensive method was developed for the detection of 48 drugs in oral fluid samples. 🔄

Thomson Solutions At Work™ is not affiliated with Lehigh Valley Toxicology, OraSure Technologies, Inc or their products.