



SOLA SAX oral fluids for cannabinoids

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Introduction

Oral fluid has become an alternative to urine for drug screening because the samples are easier to collect, easier to transport, reflect circulating levels of drugs, and don't require hydrolysis of conjugated metabolites. The equilibrium concentrations, however, are about an order of magnitude lower than urine. Thermo Scientific™ SOLA μ ™ well plate is a micro-elution solid phase extraction (SPE) 96-well plate designed for bioanalytical and clinical research applications. The fritless SPE design helps prevent blocking when processing biological matrices enabling highly reproducible and robust extraction of samples.

SOLA μ SAX has reversed-phase (RP) and strong anion exchange (SAX) functions and is ideal for extraction of acidic and/or hydrophobic drugs including cannabinoids.



Important notes

- The Thermo Scientific™ Accucore™ RPMS column, 100 × 2.1 mm, 2.6 μ m (P/N 17626-102130) is recommended for LC-MS analysis¹
- This method is designed to capture both acidic and hydrophobic substances
- Adjustment of the ratio of acetonitrile to water in the wash solvent might be needed to optimize recovery of neutral drugs, or rejection of surfactant interferences

Materials required

- Thermo Scientific™ Oral-Eze™ collection device (P/N 96100-050), and Oral-Eze sample extractor tool (P/N 96105-050)
- Thermo Scientific™ WebSeal 96-well plate for sample preparation, 2000 µL (P/N 60180-P202)
- Fisher Chemical Acetonitrile (ACN), Optima™ LC/MS grade (P/N A955-500)
- Fisher Chemical Water, Optima™ LC/MS grade (P/N W6500)
- Thermo Scientific™ Pierce™ formic acid (FA) (P/N PI28905)
- Fisher Chemical Ammonium hydroxide, Optima™ (P/N A470-250)
- SOLAµ SAX SPE 96-well plate (P/N 60209-003)
- SPE vacuum manifold, vacuum regulator, vacuum pump (or positive pressure manifold)
- WebSeal 96-well plate for waste-collection (P/N 60180-P135)
- Sample-collection plate, glass-coated (P/N 60180-P302) and mat (P/N 60180-M108), or glass insert (P/N 60180-K100)

Protocol

1. Prepare the solvents
 - Isotopically-labeled internal standard solution in acetonitrile
 - 1% ammonium hydroxide in water (v/v)
 - Wash solvent: 1:1 acetonitrile:water (v/v)
 - Elution solvent: 5% formic acid in acetonitrile (v/v)
2. Collect the sample
 - Follow instructions on the wrapper for the Oral-EZE device to collect and stabilize the sample for transport. (1 mL of oral fluid + 2 mL of buffer)
 - When ready for analysis, press the extractor tool into the collection tube until it locks; twist to remove the handle. Yields ~2 mL of sample

3. Pre-treat the samples
 - Pipette 200 µL of acetonitrile and 25 µL of internal standard solution into each of the sample preparation wells
 - Pipette 750 µL of sample into the well
 - Pipette 50 µL of 1% ammonium hydroxide solution into the well
 - Mix gently
4. Load the sample onto the SOLAµ SAX SPE well plate
 - Transfer the prepared sample to the SPE wells
 - Apply the sample to the SPE; 0.5 bar vacuum
5. Wash away interferences
 - Wash with 200 µL of 1:1 acetonitrile:water; 0.1 bar vacuum, then increase to 0.5 bar vacuum to remove all wash liquid. This removes salts, proteins, carbohydrates, surfactants.
6. Collect analyte fraction in the sample well plate
 - Pipette 60 µL of water into each receiving well
 - Elute the SPE wells with 2 × 30 µL of elution solvent; 0.1 bar vacuum to elute, then increase to 0.5 bar to recover all liquid
 - Mix the plate with gentle swirling

Reference

1. Thomas G. Carrell et. Al.; Chromatography Today, February/March (2016), p. 48, [Online](#)

Related products

Description	Part number
Universal SPE Vacuum Manifold, for 96-well plate or 24/48 cartridges	60104-230
Vacuum Pump, European version	60104-241
Vacuum Pump, North American version	60104-243



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Learn more about SOLA and SOLA μ products at thermofisher.com/solaspe