Waters™

應用手冊

Oasis Sample Extraction Products: Enhanced Sensitivity Using µElution Plate

Waters Corporation

This is an Application Brief and does not contain a detailed Experimental section.

Abstract

This application brief describes about Oasis µElution plates in combination with Oasis sorbents that are an ideal solution for small sample volumes up to 375 mL, providing up to a 15X increase in concentration.

Introduction

Waters Oasis µElution plates combine patented plate design and proven Oasis chemistries to provide high analyte recovery and clean extracts in elution volumes as low as 25 µL. This can enhance a bioanalytical assay's sensitivity and allow scientists to easily achieve their required LLOQs.

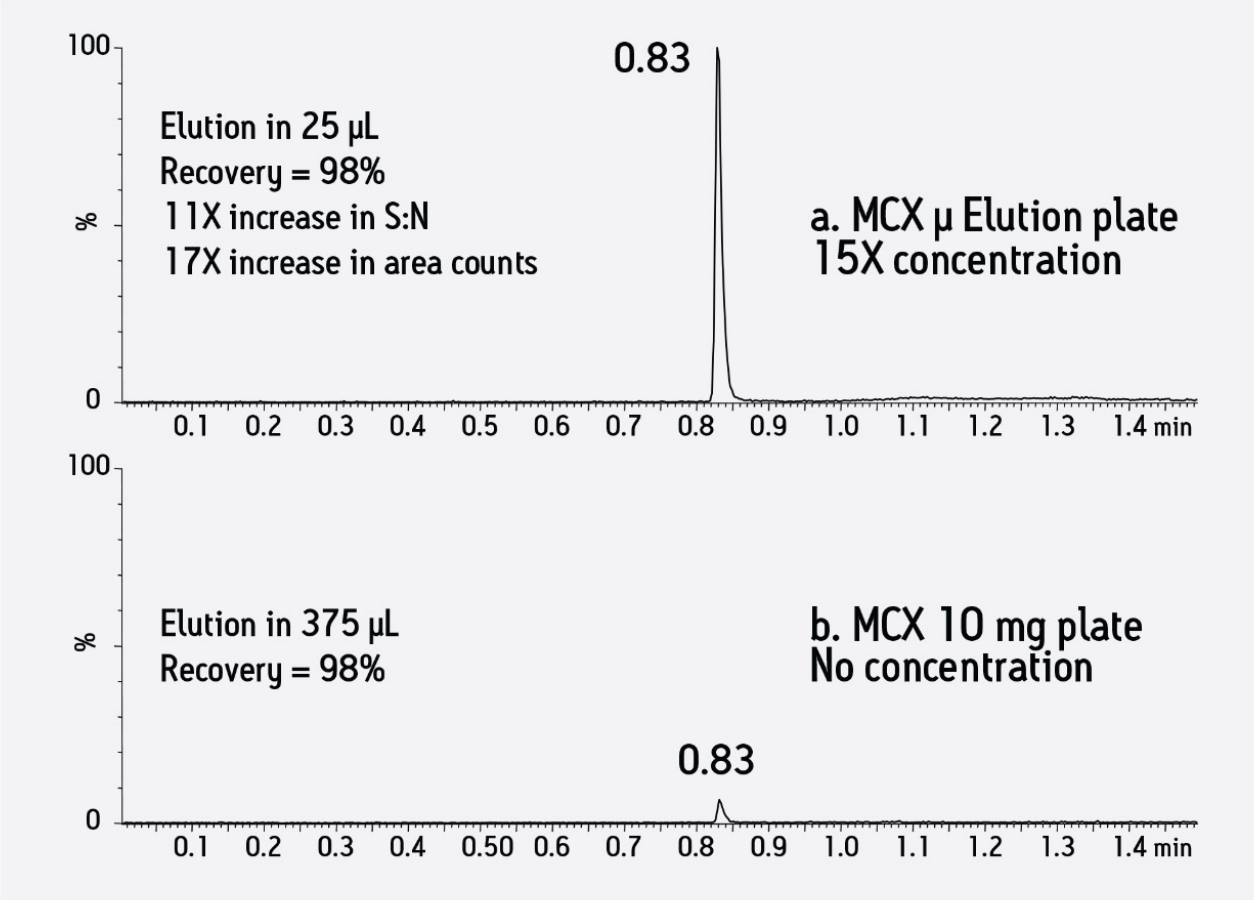
- Ideal for small sample volumes (10-25 µL)
- Eliminates evaporation and reconstitution
- Offers up to a 15X increase in concentration without evaporation
- Excellent recovery for a diverse range of therapeutic peptides

Results and Discussion

Superior Sensitivity with µElution format

The Oasis µElution format offers sample enrichment of up to 15X, providing superior sensitivity to bioanalytical assays.

Risperidone response: 15X increase in concentration



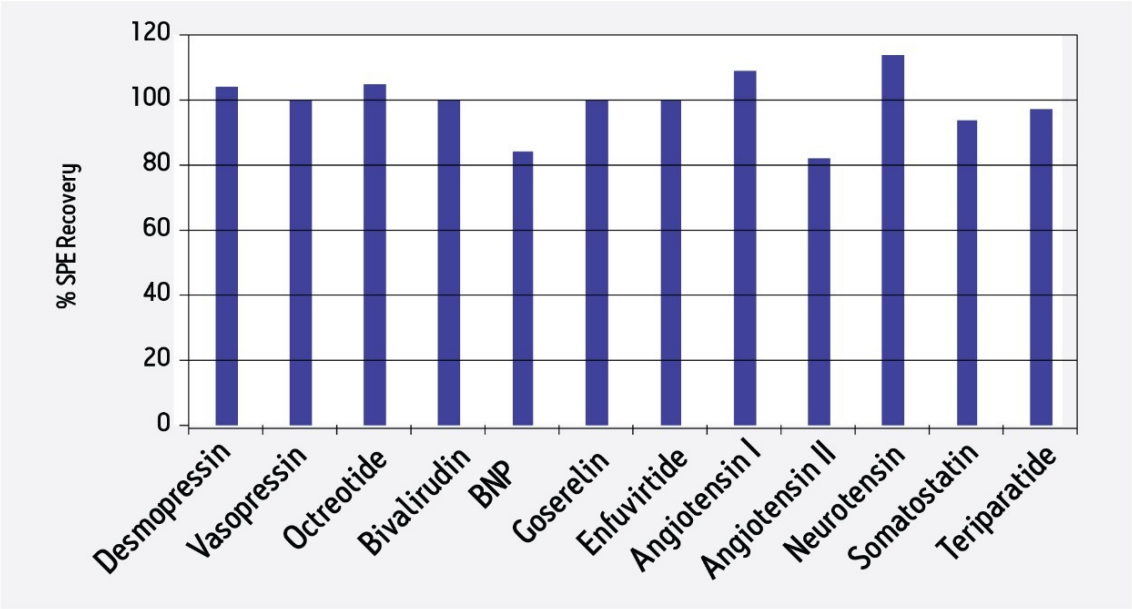
375 µL of 0.5 ng/mL risperidone in human plasma sample extracted with Oasis MCX µElution plate a) MCX µ Elution and b) MCX 10 mg.

Highest SPE Recoveries

Oasis sorbents are water-wettable which allows them to maintain high retention and capacity for a variety of analytes even if the well or cartridge runs dry. With Oasis sorbents, the analytical scientist can be assured of reliable, robust performance and the highest degree of recovery possible.

The efficient therapeutic peptide solid-phase extraction (SPE) screening strategy, based on a single protocol and two of the Oasis mixed-mode sorbents in µElution format, simplifies method development for the extraction of peptides from human plasma and provide excellent recoveries for diverse set of peptides.

Excellent SPE Recovery for 12 Peptides

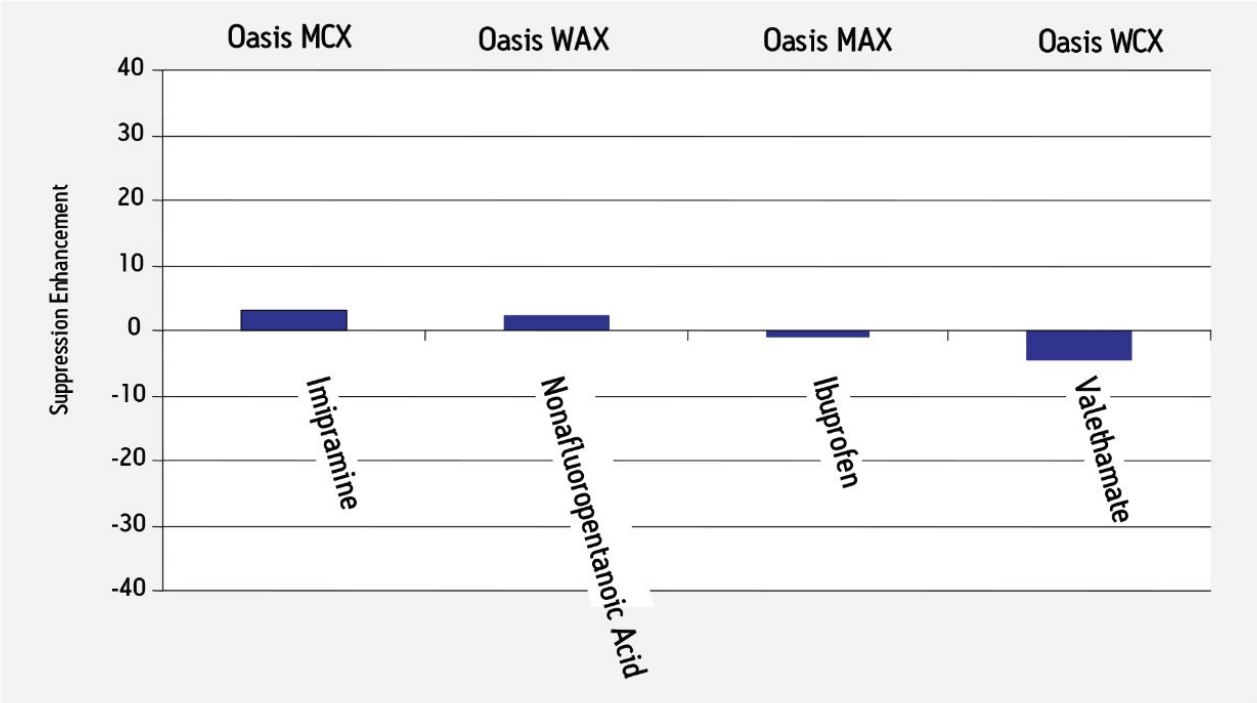


Excellent recovery for 12 diverse peptites using Oasis Mixed-Mode SPE in µElution plate format.

Lowest Matrix Effects

The combination of Oasis mixed-mode SPE and the µElution format provide the cleanest SPE extract possible, facilitating the meeting of regulatory bioanalytical requirements.

Matrix Effects for 1 ng/mL of Imipramine, Nonafluoropentanoic Acid, Ibuprofen, and Valethamate in Human Plasma



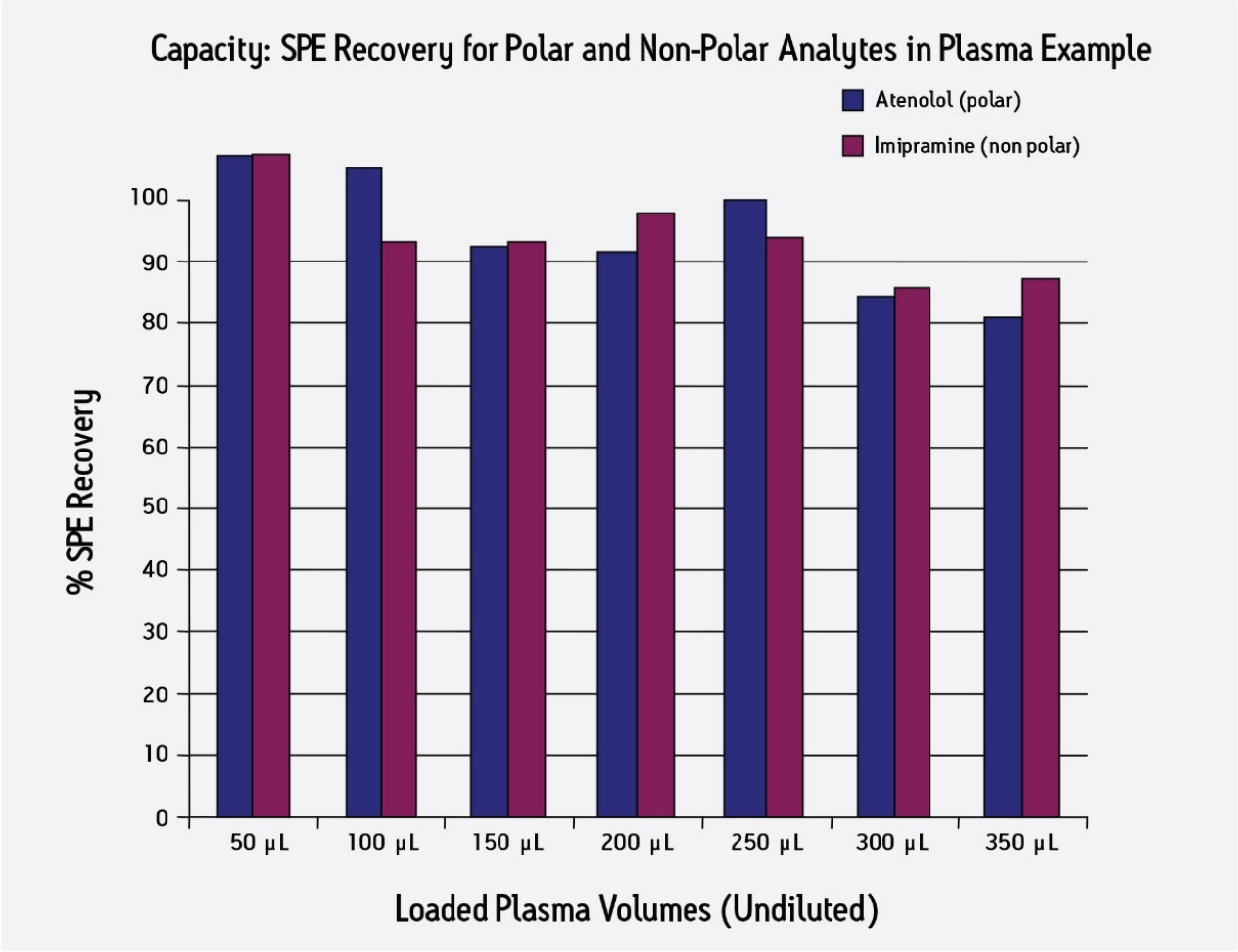
Matrix effect results of 4 diverse small molecules on 4 mixed-mode Oasis chemistries in (1 ng/mL in human plasma).

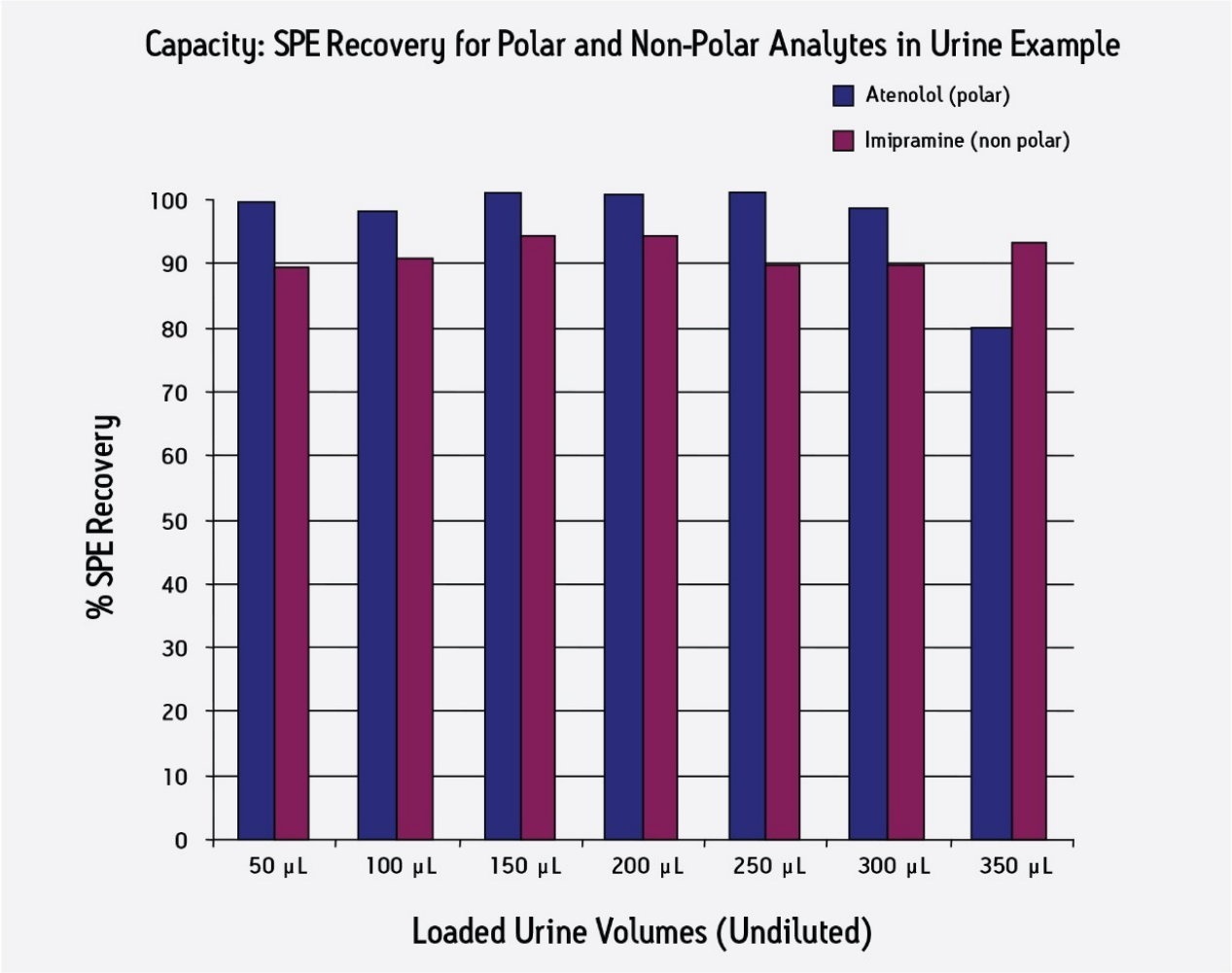
µElution Plate Loading Capacity

The physicochemical properties of Oasis sorbents are designed to provide exceptionally high loading capacity, even though each well in a Waters Oasis µElution plate contains only 2 mg of Oasis sorbent.

To determine the Oasis µElution plate capacity, increasing volumes of plasma and urine samples (from 50 µL to 350 µL in 50 µL increments) were spiked with 200 ng/mL Imipramine (non-polar base) and 200 ng/mL Atenolol (polar base). The plasma aliquots were diluted 1:1 with 4% aqueous H_3PO_4 and the urine aliquots were diluted 1:1 with H_2O and then loaded onto the µElution plate. SPE recovery was calculated and plotted for each loading level.

SPE Recovery for 200 ng/mL Imipramine and 200 ng/mL Atenolol on Oasis MCX µ Elution Plate





Conclusion

Using a unique plate design in combination with Oasis sorbents, the Oasis µElution plates are an ideal solution for small sample volumes up to 375 mL, providing up to a 15X increase in concentration. This concentration, along with excellent recoveries, equates to unparalled sensitivity for bioanalytical samples.

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