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This bioanalytical method was developed and validated to reach the lower limit of quantitation of 0.005 ng/mL and up to 10 ng/mL for Ropinirole in human plasma, a potent drug with a low oral dose range. Ropinirole (marketed as Requip® in the US and as Adartrel® in Europe) is a non-ergoline dopamine agonist used in the treatment of Parkinson's disease, and is also the only medication in the United States with a Food and Drug Administration-approved indication for the treatment of restless leg syndrome. Ropinirole is extensively metabolized by the liver to inactive metabolites through N-despropylation and hydroxylation, primarily by the specific P450 enzyme CYP1A2. Sample preparation was needed to be as thorough and selective as possible to ensure the robustness of the final method. It is important to obtain the cleanest final extracts to minimize or eliminate matrix effects. Mixed-mode Solid-Phase Extraction (SPE) was employed for this purpose as it relies on both reversed phase and ion exchange to more selectively separate analytes from matrix components. The described method below will increase the productivity and efficiency of PK laboratories. In addition, the method minimizes solvent consumption and time, as well as being fully automatable. The developed method fulfilled the monitoring authorities requirements for method validation of drug assays and active metabolites assessment.

SAMPLE PREPARATION

Use Oasis MCX 96-well μ Elution Plate ([186001830BA](#)). To prepare sample, condition (200 μ L), equilibrate (200 μ L) load 600 μ L of the diluted plasma, wash twice and elute (1 X 25 μ L).

LC CONDITIONS

Instrument: ACQUITY UPLC System

Column: ACQUITY UPLC® BEH C₁₈, 2.1 x 50 mm, 1.7 μ m

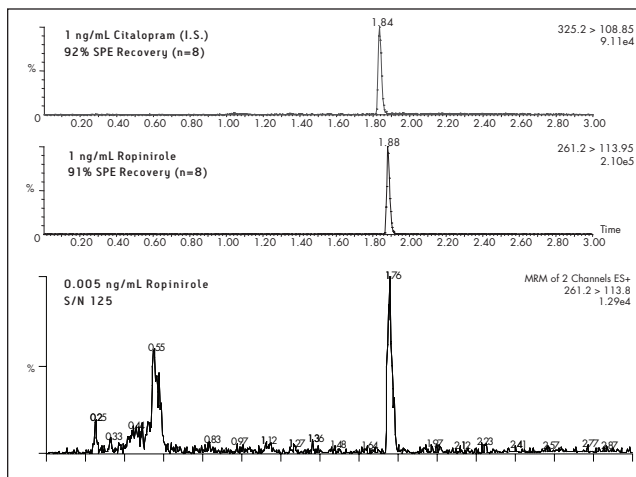
[Part number: 186002350](#)

MS CONDITIONS

Instrument: Waters Quattro Premier™

Ion Source: Electrospray Positive (ESI⁺)

UPLC/MS Chromatogram of Ropinirole and Citalopram in Plasma



CONCLUSIONS

A rapid and sensitive method for the determination of ropinirole in human plasma has been developed. The method achieves a S/N of over 100:1 at the required LLOQ of 0.005 ng/mL. The method meets the FDA requirements for linearity and excellent recovery for both analytes is achieved.

The combination of the Oasis MCX μ Elution plate for easy sample preparation and the speed and sensitivity of the UPLC/Quattro Premier platform facilitated rapid development of a robust bioanalytical method. This combination also enables researchers to obtain higher quality data faster in order to make critical project decisions.

Ordering Information

Products Used in this Application	Part Number
ACQUITY UPLC BEH C₁₈, 2.1 x 50 mm, 1.7 μm	186002350
Oasis MCX 96-well μElution Plate	186001830BA

For complete sample preparation, HPLC and MS conditions, refer to the full application note: [720002162EN](#)