VALIDATED BIOANALYTICAL METHOD

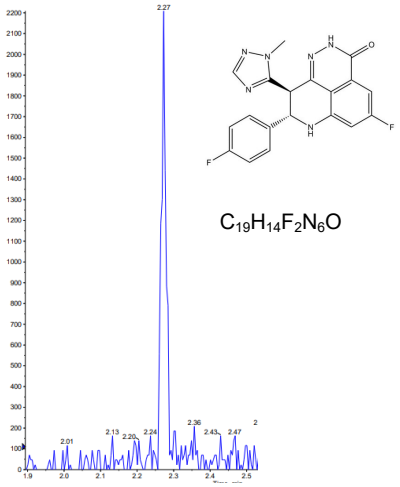
Bioanalytics, Metabolomics and Pharmacokinetics Shared Resource (BMPK)

Talazoparib in Human Plasma

(Sensitivity: 0.0200 ng/mL for Talazoparib)

BMPK has validated a highly sensitive liquid chromatographic tandem mass spectral assay (LC-MS/MS) for the analysis of Talazoparib (Talzenna®) in K_2 EDTA human plasma. Talazoparib (Talzenna®) was approved by the FDA in 2018 for the treatment of (gBRCA mutated) breast cancer as a single agent, and in 2023 for the treatment of (HRR-mutated) prostate cancer in combination with enzalutamide. Talazoparib works as a potent inhibitor of the poly ADP-ribose polymerase (PARP) enzymes, leading to blocked DNA repair of single and double strand breaks in cancer cells. The validated method has been used to support an ongoing Roswell Park clinical trial entitled " A Phase I Study of Trifluridine/ Tipiracil plus the Poly (ADP) Ribose Polymerase Inhibitor Talazoparib in Advanced Cancers".

Specifications and Validation Performance	
Sample Matrix:	Human Plasma
Required Volume:	100 µL
Preparation Procedure:	Liquid-liquid Extraction (LLE)
HPLC Column:	C18
Mobile Phase:	Acetonitrile with formic acid
Flow Rate:	700 µL/min
Detection Type:	Tandem Mass Spectrometry (MS/MS)
Calibration Range:	0.0200 - 25.0 ng/mL
Calibrator Accuracy:	100% (96.3 - 102%; n=4)
Calibrator Precision:	3.02% RSD (0.722 - 7.50%; n=4)
QC Concentrations:	0.0600, 1.00, 18.5 ng/mL
QC Accuracy:	94.9% (92.8 - 97.2%; n=18)
QC Precision:	5.55% RSD (3.29 - 7.46%; n=18)



$C_{19}H_{14}F_2N_6O$

Talazoparib at the Lower Limit of Quantitation level

Pharmacokinetics Parameters of Talazoparib[1]	
Recommended dosing	Once-daily oral administration of 0.10–1.00 mg
Plasma protein binding	*in vitro*, 74% protein binding and independent of its concentration
Clearance	Mean oral clearance is 6.45 L/h
T_{max}	Ranging 1-2 hours
Maximum plasma Concentration, C_{max}	16.4 (32%) ng/mL
Plasma Terminal Half-Life ($t_{1/2}$)	90 (±58) hours in patients with cancer

[1] FDA Approved Drug Products: TALZENNA (talazoparib) capsules, for oral use (June 2023)

BMPK offers a wide range of bioanalytical and PK/PD modeling services to assist investigators in their basic research, preclinical, and clinical study objectives.

For information on services and pricing, contact Joshua Prey, MS, Research Project Administrator, at (716) 845-3313 or Joshua.Prey@RoswellPark.org

ROSWELL PARK COMPREHENSIVE CANCER CENTER