

Predicting the distribution patterns of antibiotic-resistant microorganisms in the context of Jordanian cases using machine learning techniques

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Supplementary Materials

Table 1. Optimized Bio-analytical Conditions

Parameter	Description
Column	Water symmetry C ₁₈ , 150mm x 4.6mm, 3.5µm
Mobile phase	Methanol: 0.1% Formic acid 40:60 v/v
Flow rate	1.0 ml/min
Injection volume	10µL
Retention time	Tezepelumab 1.944 min
Run time	5 min
Column oven temperature	Ambient

Table 2. Matrix effect Results of Tezepelumab (HQC-90ng/ml, LQC-30ng/ml)

S.No.	Plasma Lot No.	HQC	LQC
		Nominal Concentration(ng/ml)	
		90	30
		Average analyte peak area (n=3)	
1.	Lot 1	5.281x10 ⁵	1.761x10 ⁵
2.	Lot 2	5.257x10 ⁵	1.761x10 ⁵
3.	Lot 3	5.279x10 ⁵	1.741x10 ⁵
4.	Lot 4	5.272x10 ⁵	1.753x10 ⁵
5.	Lot 5	5.218x10 ⁵	1.755x10 ⁵
6.	Lot 6	5.278x10 ⁵	1.748x10 ⁵
n		18	18
Mean		5.264x10 ⁵	1.753x10 ⁵
SD		0.02761	0.03112
% CV		0.52	1.77
% Mean Accuracy		98.55%	98.46%

Table 3. Linearity Results of Tezepelumab

Final conc. in ng/ml	Response	Area response ratio
0	0	0.0
6.00	0.356	0.105
15.00	0.875	0.262
30.00	1.754	0.522
45.00	2.537	0.755
60.00	3.554	1.069
75.00	4.251	1.276
90.00	5.253	1.558
120.00	7.105	2.099
Slope	0.0173	
Intercept	0.00118	
R ² Value	0.99917	

Table 4. Precision and Accuracy Results of Tezepelumab

Acquisition ID	HQC	MQC	LQC	LLOQ
	Nominal Concentration (ng/ml)			
	90	60	30	6
	Analyte peak area			
1	5.280x10 ⁵	3.561x10 ⁵	1.740x10 ⁵	0.369x10 ⁵
2	5.251x10 ⁵	3.561x10 ⁵	1.796x10 ⁵	0.365x10 ⁵
3	5.280x10 ⁵	3.587x10 ⁵	1.784x10 ⁵	0.389x10 ⁵
4	5.282x10 ⁵	3.597x10 ⁵	1.790x10 ⁵	0.367x10 ⁵
5	5.231x10 ⁵	3.520x10 ⁵	1.778x10 ⁵	0.334x10 ⁵
6	5.250x10 ⁵	3.523x10 ⁵	1.735x10 ⁵	0.300x10 ⁵
n	6	6	6	6
Mean	5.262x10 ⁵	3.558x10 ⁵	1.771x10 ⁵	0.354x10 ⁵
SD	0.02132	0.03178	0.02630	0.0318
% CV	0.41	0.89	1.49	8.98
% Mean Accuracy	98.51%	99.92%	99.47%	99.41%

Table 5. Stability studies of Tezepelumab

Stability experiments spiked plasma	Concentration (ng/ml)	% CV	Mean accuracy
Benchtop Stability	LQC-30.0 MQC-60.0 HQC-90.0	1.84	98.40
		0.93	100.06
		0.39	97.99
Autosampler stability		1.43	98.46
		0.87	99.75
		0.61	98.29
Freeze-Thaw stability		1.40	99.13
		0.83	100.00
		0.44	98.38
Short term stability	0.18	95.76	
	0.07	96.19	
	0.03	97.07	
Long term stability Day-28	0.19	86.97	
	0.09	87.19	

		0.44	89.15
Wet extract 12 hrs.		1.10	99.52
		0.86	99.94
		0.54	98.31
Wet extract 18 hr.		1.62	98.57
		0.84	99.97
		0.54	98.77
Dry extract 12 hrs.		2.10	97.84
		0.95	99.52
		0.54	98.49
Dry extract 18 hrs.		1.68	98.06
		0.73	100.34
		0.42	98.29

Table 6. Pharmacokinetic studies of Tezepelumab

Time Intervals (Days)	Tezepelumab (ng/ml)
2	31.682
4	43.082
6	52.520
8	46.561
12	31.084
24	0

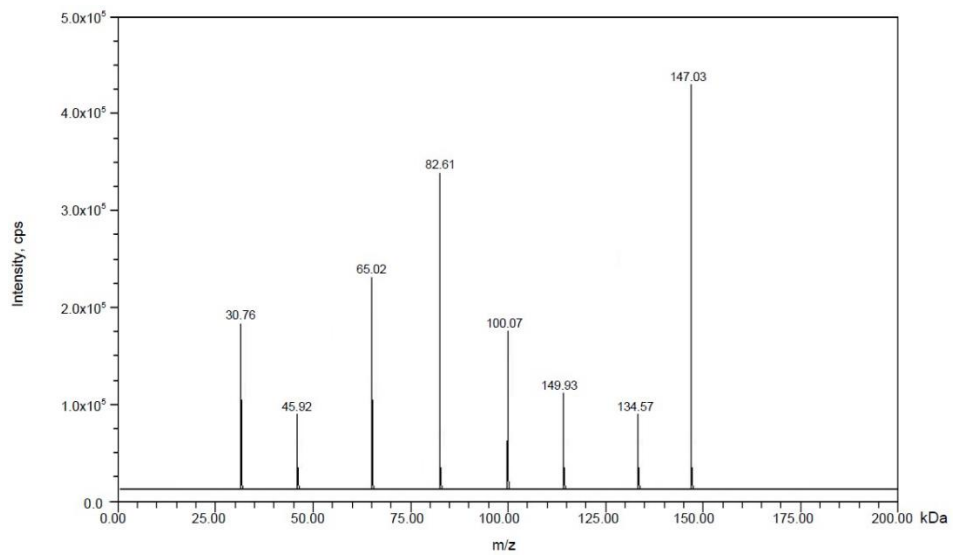


Figure 1: Mass spectrum of the Fragmentation pattern of Tezepelumab (147.03 & 82.61)

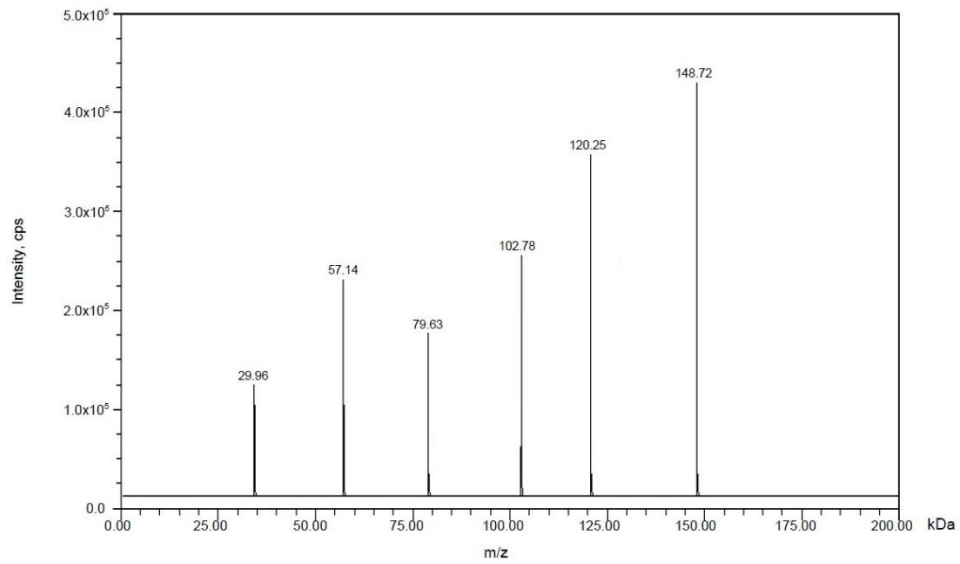


Figure 2: Mass spectrum of the Fragmentation pattern of IS (148.72 & 120.25)

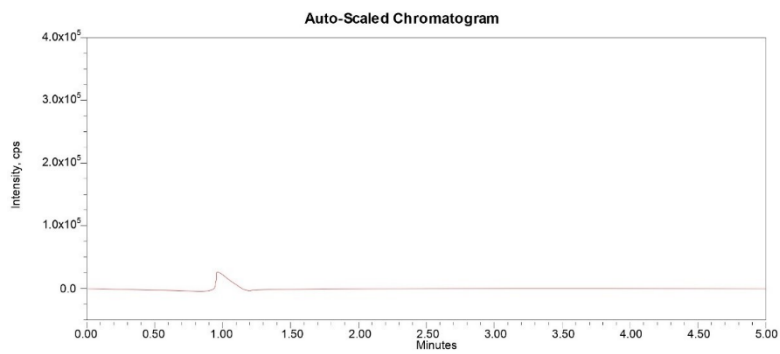


Figure 3: Blank chromatogram Tezepelumab

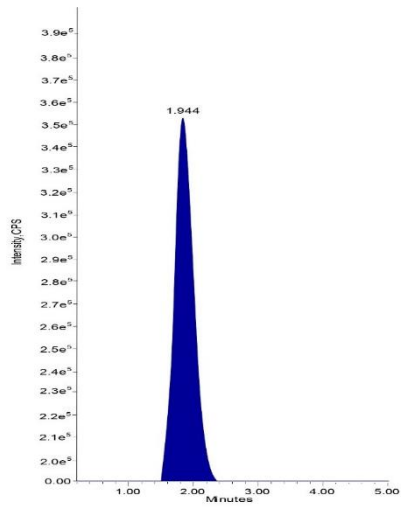


Figure 4: Standard chromatogram of Tezepelumab

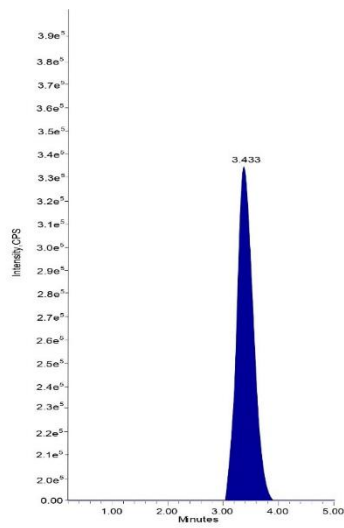


Figure 5: Standard chromatogram of IS

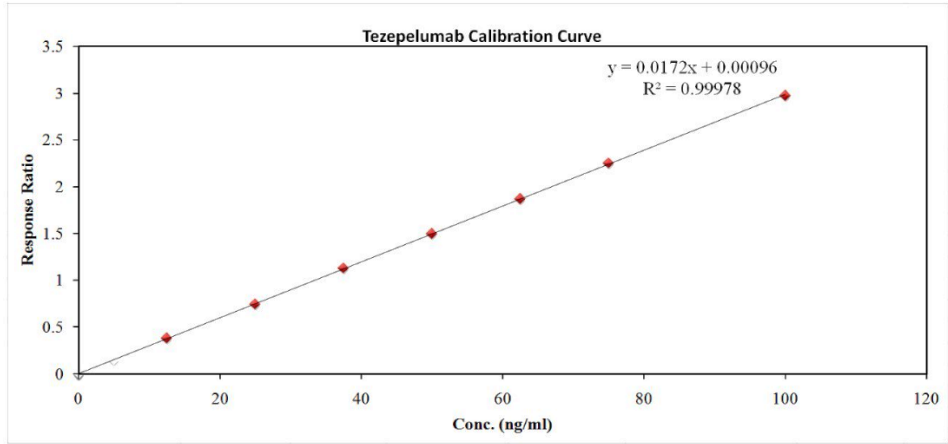


Figure 6: Calibration plot for Tezepelumab

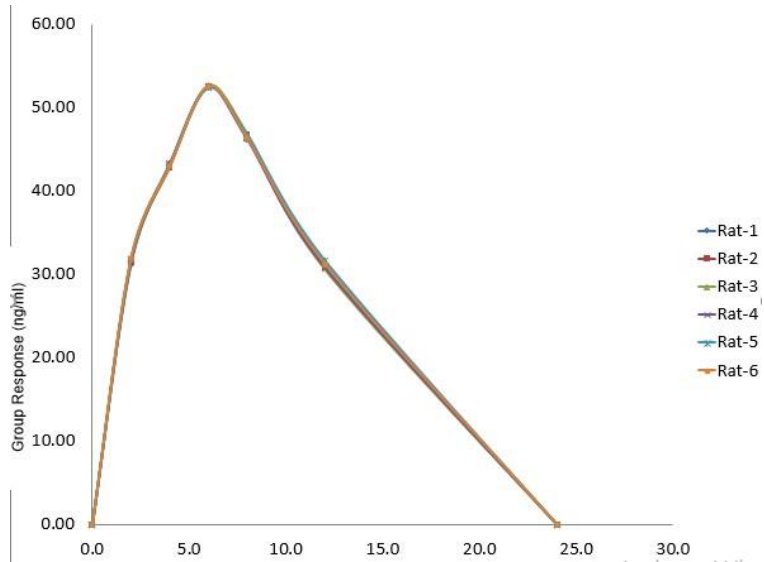


Figure 7: Recovery graph for Tezepelumab in plasma