



## Antiepileptic Drugs in Serum/Plasma LC-MS/MS Analysis Kit

Epilepsy is defined as seizure disorder induced by surge of electrical activity in the brain. Anticonvulsant or antiepileptic medications encompass a broad range of drugs that are primarily intended to control ongoing or anticipated future seizures as well as being beneficial in non-epileptic conditions such as psychiatric disorders and pain syndromes. Many antiepileptic drugs (AEDs) have a narrow therapeutic range thus relatively modest alterations of drug concentration in plasma can lead to loss response or toxic effects. Therefore, it is necessary to simultaneously determine AEDs including their active metabolite to improve treatments without undesirable side effects.

### Highlights of the Analysis Kit

---



Simultaneous quantification of 21 antiepileptic drugs



Total run time is 10.5 min.



Minimal pipetting with a protein **precipitate-and-shoot** approach, without derivatization



Each drug safeguarded by its own internal standard



Consuming small volume of patient's sample



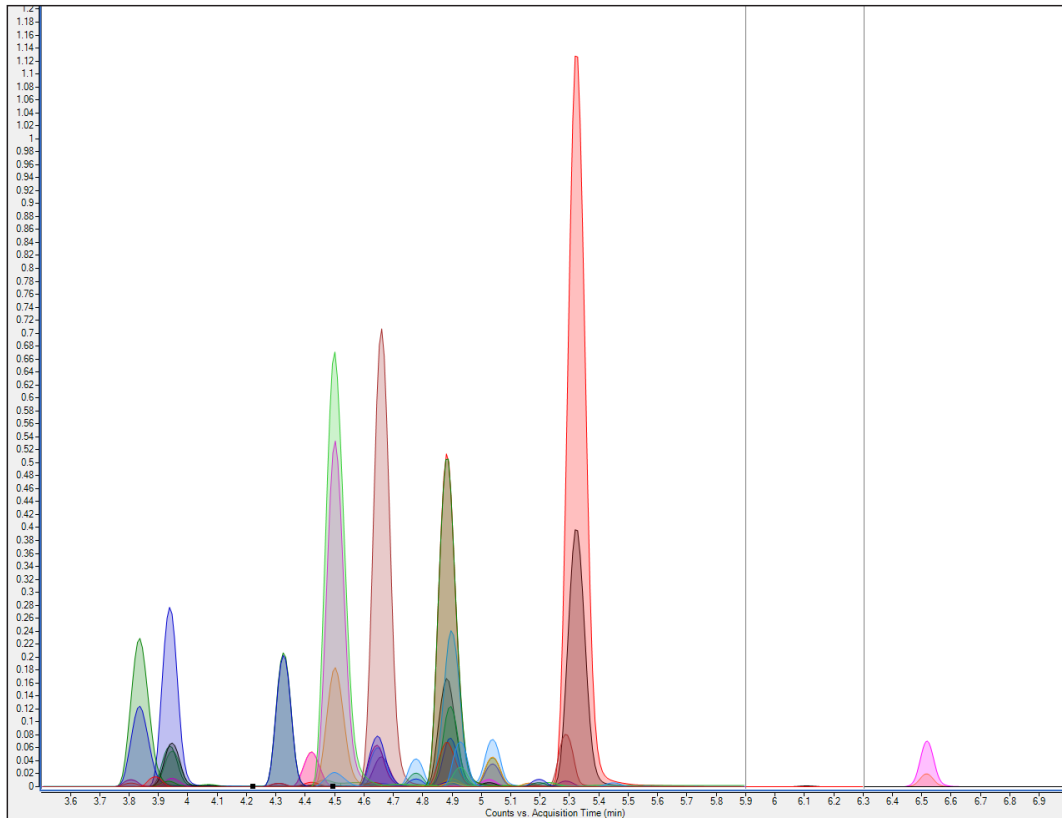
Long life span of HPLC column

Parameters			
Levetiracetam Gabapentin Pregabalin Zonisamide Lamotrigine Rufinamide	Felbamate Primidone Lacosamide Carbamazepine Epoxide Phenobarbital Oxcarbazepine-Metabolite	N-DesmethyImethsuximide Oxcarbazepine Topiramate Phenytoin Tiagabine Carbamazepine	Valproic Acid Stiripentol Ethosuximide
Sample Type			
Serum/Plasma			

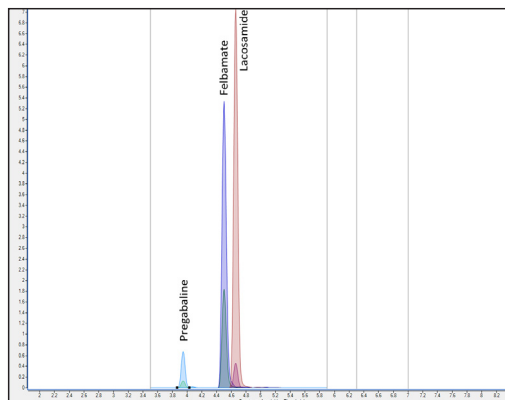
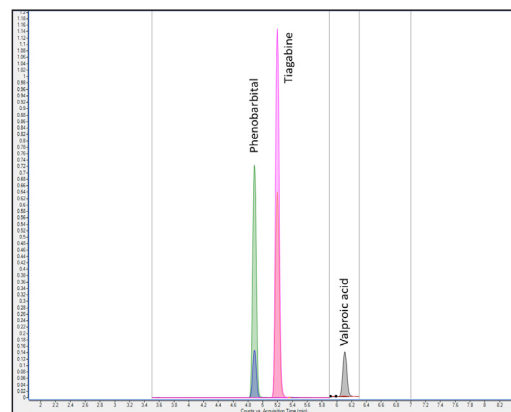
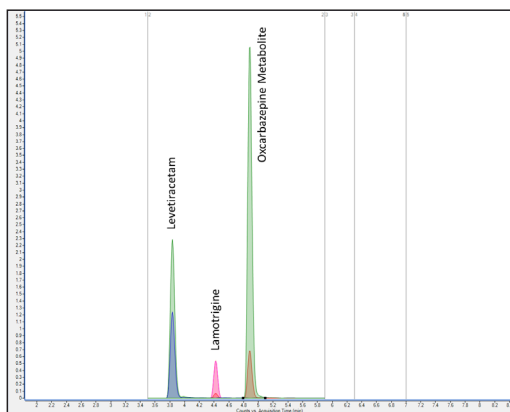
### Sample Preparation

1	Pipette 50 $\mu$ L of serum/plasma sample into a microcentrifuge tube
2	Add 30 $\mu$ L of internal standard solution and vortex for 5 sec.
3	Add 400 $\mu$ L of Reagent-1. Vortex for 5 s, then centrifuge at 4000 rpm for 5 min.
4	Transfer the clear supernatant into an HPLC vial prior to injection

### Example Chromatogram



Total ion chromatogram of the analysis



Extracted ion chromatograms of the analysis

## Method Performance

All validation results were obtained using Agilent 6465 TQ (Ultivo) system

Analytes	LOQ (mg/L)	Linearity (mg/L)	Recovery (%)	Repeatability (%CV)
Levetiracetam	1.97	1.97 – 67.10	115	1.17
Gabapentin	0.29	0.29 – 27.20	114	1.04
Pregabalin	0.13	0.13 – 11.80	103	1.64
Ethosuximide	1.42	1.42 – 120.0	110	3.18
Zonisamide	0.56	0.56 – 44.10	103	1.24
Lamotrigine	0.24	0.24 – 21.30	107	1.10
Felbamate	1.57	1.57 – 107.0	111	2.32
Primidone	0.32	0.32 – 29.0	114	4.24
Lacosamide	0.10	0.10 – 13.60	102	3.35
Oxcarbazepine Metabolite	1.02	1.02 – 53.90	95	0.99
Phenobarbital	1.42	1.42 – 27.50	114	2.87
Carbamazepine 10,11-epoxide	23.11	23.11 – 17.90	98	2.53
Phenytoin	87.49	87.49 – 46.80	107	1.62
Topiramate	0.11	0.11 – 5.20	113	1.51
N-Desmethylnmethsuximide	1.83	1.83 – 0.380	113	1.96
Oxcarbazepine	0.02	0.02 – 21.10	102	0.42
Tiagabine	0.01	0.01 – 42.10	97	3.65
Carbamazepine	0.24	0.24 – 117.0	98	1.36
Rufinamide	2.15	2.15 – 15.60	105	2.98
Valproic acid	2.87	2.87 – 67.10	100	2.14
Stiripentol	0.06	0.06 – 27.20	90	7.16



**Altium International Laboratuvar Cihazları A.Ş.**

Barbaros Mah. Temmuz Sk. No:6 Altium Plaza Ataşehir, İstanbul  
T: +90 216 571 02 00 F: +90 216 571 02 02

www.jasem.com.tr