

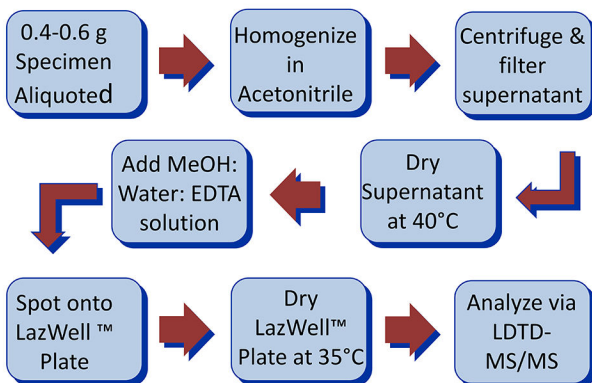
Detection of Gabapentin in Human Umbilical Cord

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INTRODUCTION

Gabapentin is an anti-convulsant and is used to treat neuropathic pain. It is a less-addictive alternative to opioids; however, abuse and addiction still occurs and has been increasing since the early 2000's. Gabapentin has been shown to cross the placenta and accumulate in the fetal compartment, resulting in a higher rate of pre-term births, lower birth weights and neonatal abstinence syndrome. Early identification of newborns exposed to gabapentin in utero is vital for proper treatment and better neonatal outcomes.

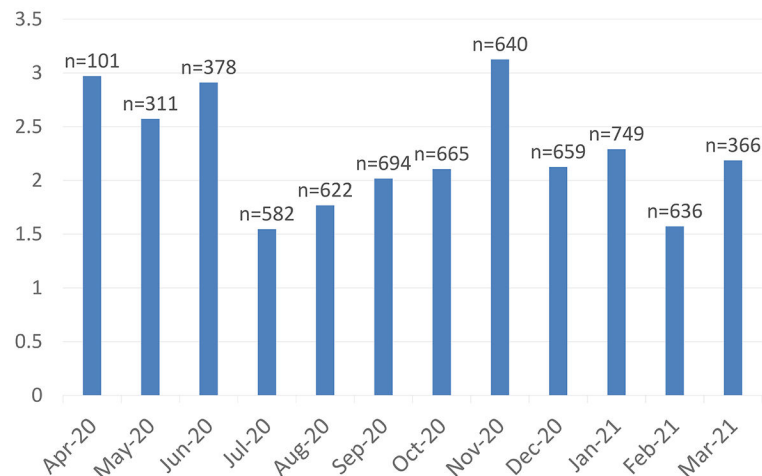
SCREENING ANALYSIS METHOD



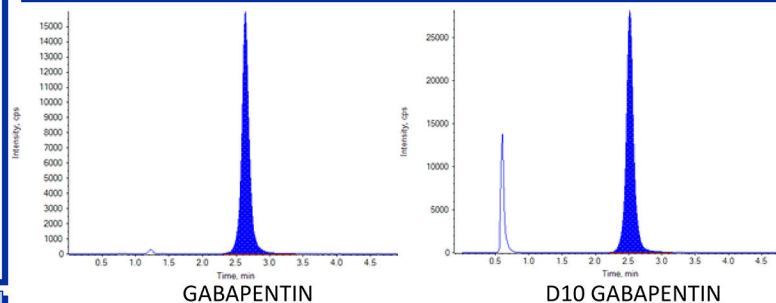
INSTRUMENT PARAMETERS

Analyte	Screening Method		Confirmatory Method	
	Gabapentin	D10 Gabapentin	Gabapentin	D10 Gabapentin
Precursor Ion	172.1	182.1	172.1	182.2
Product Ion	137.1	147.1	137.2	147.2
DP	60.00	30.00	41.00	51.00
CE	25.00	25.00	19.00	21.00
CXP	15.00	15.00	14.78	15.08
EP	10.00	10.00	7.00	5.00

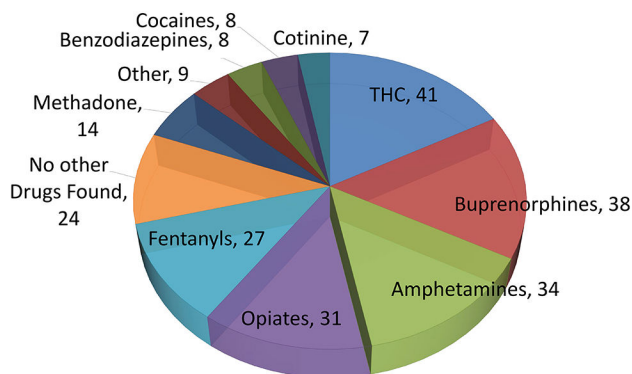
GABAPENTIN POSITIVITY RATE



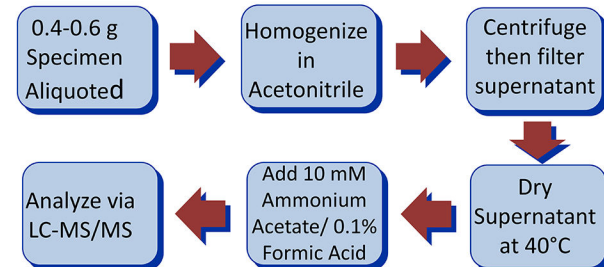
LC-MS/MS LOW CONTROL



CONCURRENT POSITIVITY WITH GABAPENTIN



CONFIRMATORY ANALYSIS METHOD



VALIDATION RESULTS

	Screening Analysis Method	Confirmatory Analysis Method
Cutoff	10 ng/g	10 ng/g
Stability	Extracts- 48 hours Dried Plate- 48 hours	7 days
Limit of Detection	3 ng/g	0.2 ng/g
Linear Range	N/A	4 ng/g - 50 ng/g
Interferences	None observed	None Observed
Matrix Effect	Ion Suppression	No Significant Matrix Effect
Authentic Specimen	N=70	100% Correlation with Screening Analysis

CONCLUSION

The validated method described here allows early and accurate identification of prenatal exposure to gabapentin, allowing for early intervention and more successful outcomes.

REFERENCES

- Paterno E, Hernandez-Diaz S, Huybrechts KF, Desai RJ, Cohen JM, Mogun H, et al. (2020) Gabapentin in pregnancy and the risk of adverse neonatal and maternal outcomes: A populationbased cohort study nested in the US Medicaid Analytic eXtract dataset. *PLoS Med* 17(9):e1003322.
- Fujii, Hisaki, et al. "Pregnancy Outcomes Following Gabapentin Use: Results of a Prospective Comparative Cohort Study." *Neurology, Lippincott Williams & Wilkins*, 23 Apr. 2013, www.ncbi.nlm.nih.gov/pmc/articles/PMC3662323/.

DISCLAIMER

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