



K31 Frequency of Gabapentin in Postmortem Cases Screened by Enzyme Linked Immunosorbent Assay (ELISA)

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Learning Overview: The goal of this presentation is to summarize the prevalence of gabapentin in routine postmortem case work using ELISA screening and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) confirmation.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by providing frequency, concentrations, and drug combination information of gabapentin in postmortem cases. This data will provide laboratories information to help make decisions as to whether or not they should include gabapentin as part of their own testing regimen.

Prior to June 2019, a large percentage of this study's laboratory's postmortem testing, which includes ELISA and high-performance Liquid Chromatography/Time-Of-Flight/Mass Spectrometry (LC/TOF-MS) screens, did not routinely look for the presence of gabapentin. It was only tested for if requested by a client for direct analysis, added onto routine testing because of case history provided by a client but not ordered up front, or part of a certain testing panel that included screening by Gas Chromatography/Mass Spectrometry (GC/MS). Increased demand and prevalence of gabapentin dictated that it was necessary to include it in the scope of analysis for other testing panels. An ELISA kit became available to test for gabapentin and was incorporated into the other postmortem testing panels where the scope of analysis is more than simply drugs of abuse. The reporting limit for the screening analysis by ELISA has been established at 5.0mcg/mL and 1.0mcg/mL for confirmation analysis by high-performance LC/MS/MS, respectively.

After six weeks of collecting data, approximately 11% (681/6,224) of blood samples from cases that would not have previously been screened for gabapentin using the laboratory's previous testing platform were presumptively positive by ELISA. The confirmation rate was 82% (559/681). Observed concentrations of gabapentin during this time period ranged from (1.1-610)mcg/mL, with a mean of 17.9mcg/mL and median of 10.0mcg/mL. Decomposition is suspected to be an interferent with this ELISA kit.

Analysis of positive blood gabapentin case data near the start of the new testing platform revealed that the most frequently seen drug in combination with gabapentin was fentanyl, followed in order by ethanol, cannabinoids, oxycodone, clonazepam and 7-amino clonazepam, hydrocodone, cocaine and benzoylecgonine, amphetamine/methamphetamine, alprazolam, diphenhydramine, and heroin (defined as a case in which 6-monoacetylmorphine was detected in any matrix). Data collected over a seven-month period beginning June 2019 through January 2020, including concentration ranges of gabapentin and frequency of co-administration with other drugs, will be presented.

Gabapentin, ELISA, Postmortem