



K4 Quantitation of Propane in Biological Materials by Headspace GC

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Attendees will be briefed on an important technique to quantify propane and various information about propane poisoning.

This presentation will impact the forensic community and/or humanity by demonstrating one of the most difficult methods to confirm and quantify propane. The authors tried to determine the propane in biological samples.

Two persons died from a LPG explosion in an apartment and forensic quantification of propane, the predominant component of LPG, in the biological materials of the deceased was performed using headspace-GC/FID. Because of the variation of instrument performance and sample injection, the internal standard method was adopted. The stability, retention profile, xenobiotic, and similarity of partition coefficient were considered to select the appropriate internal standard and pentane in iso-butanol was chosen. Injecting a calculated volume of pure propane gas into a capped vial containing 2 mL of blood and 5 μ L of internal standard created calibration standards. The calibration curve was linear from 0.09 μ g/mL to at least 90.0 μ g/mL. The method validation data of repeatability, recovery and linearity were also determined. The propane quantities in blood, fat, and brain tissue were calculated between 0.27 and 70.91 μ g/mL (μ g/g), and the maximal value was observed in fat. The confirmation of propane was conducted by solid phase micro-extraction followed by mass spectrometry.

Propane, Quantification, SPME GC-MS