



### K67 A Rare Case Report on Sedative-Hypnotic Drug Screening in Homicidal Carbon Monoxide (CO) Poisoning

Linchuan Liao\*, Sichuan University, Chengdu, Sichuan 610041, CHINA

**Learning Overview:** After attending this presentation, attendees will understand a rare case of deliberate homicide via CO poisoning.

**Impact on the Forensic Science Community:** This presentation will impact the forensic science community by highlighting the importance of sedative-hypnotic drug screening in the case of CO poisoning.

CO has been considered the number one “Silent Killer.” In forensic practice, deaths due to CO poisoning are usually suicidal or accidental; homicidal CO poisoning is very rare. The current report presented an ingenious crime of homicidal CO poisoning, which is expected to emphasize the importance of sedative-hypnotic drug screening in the case of CO poisoning.

**Case:** Two men (Decedent A and B) in their fifties were found dead in a car parked in an open parking area in winter. Decedent A was lying on the reclining driver’s seat and Decedent B was lying prostrate on the reclining passenger seat. All doors and windows were locked. The ignition key was in the “ON” position, but the engine was not running. There was neither a suicide note in the car nor at the home of the victims. In the meantime, it was discovered that about \$75,000 cash carried by the decedents was missing. Autopsies were subsequently conducted as requested by both decedents’ wives.

**Autopsy Findings:** There were no notable injuries on the surface of the two bodies. The sclera and palpebral conjunctivae showed some petechiae in both bodies. Both of the decedents exhibited cherry-pink lividity, which did not fade upon finger pressure. Internal examination revealed that the musculature and internal organs were bright red in color. Sporadic petechiae were present on the surface of the heart, liver, lungs, and spleen.

**Toxicological Analyses:** Cardiac blood samples from both decedents were obtained at the autopsy for toxicological analyses of carbonyl hemoglobin (COHb), alcohol, and benzodiazepines. Blood COHb saturation of Decedent A and Decedent B determined by visible spectrophotometry were found to be 70.5% and 69.5%, respectively. Concentrations of alcohol in the blood samples of Decedent A and Decedent B determined by Headspace/Gas Chromatography (HS/GC) method were found to be at 0.20mg/ml and 1.02mg/ml, respectively. For analyses of benzodiazepines, blood samples were treated by liquid-liquid extraction with ethyl acetate, followed by identification and quantification analysis using Ultra-Performance Liquid Chromatography-Tandem Mass Spectrometry (UPLC-MS/MS). Estazolam was detected in the blood of both decedents at 0.31µg/ml and 0.10µg/ml in Decedent A and Decedent B, respectively.

**Discussion:** Since fatalities can take place when the CO saturation of blood rises above 40%, it seemed reasonable to judge that the cause of the deaths was CO poisoning. However, there were two questionable points in this case: (1) \$75,000 cash was missing; (2) estazolam was detected in both decedents (both decedents had no medical history of estazolam). Decedent A’s wife told the police that her husband had an appointment with his business partner C and never came back after that. After repeated interrogation, C eventually confessed that he put estazolam in the decedents’ drinks and drove the two sleeping persons to the suburb; then he locked them in his car and poisoned them with a prepared CO bottle, followed by moving the bodies back to Decedent A’s car, reclining the seats and turning on the ignition key, making it look like an accident. Although homicidal CO poisoning is very rare in forensic practice, this current case emphasizes the importance of additional screening for sedative-hypnotic drugs in the case of CO poisoning.

#### Homicidal CO Poisoning, Toxicological Analysis, Case Report