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This report documents a case of drug-facilitated sexual assault (DFSA) under the influence of solvents. The victim was a 13-year old female involved in a sexual assault. Upon contact by law enforcement, she was still confused and could hardly explain the facts. She told authorities that she was kidnapped 4 hours ago and spent a few hours in a room with loss of consciousness. Two individuals with their face covered put a cloth soaked in a solvent on her mouth. The girl awakened semi-nude in the street with memory loss. No alcohol was present in the body, no odor of alcohol was detected on the subject's breath.

The medical examiner did not see any lesions after the gynecological exam. He took a blood sample with the purpose of investigating chloroform or similar anesthetics. Toxicological analysis in the victim's blood revealed the presence of 7.6 mg/L of benzene, 24.8 mg/L of toluene, and 0.6 mg/L of xylene (mixture of isomers). Regarding other analytical findings, 0.02 mg/L of diazepam was found. The aromatic solvents involved in this case were detected using gas chromatography with flame ionization detector (GC-FID) and confirmed using gas chromatography-mass spectrometry (GC-MS) full scan mode after liquid-liquid extraction of the whole blood sample. Quantitation of the aromatic solvents was carried out using GC-FID. Diazepam was detected using gas chromatography with nitrogen-phosphorus detector (GC-NPD) and confirmed using gas chromatography-mass spectrometry (GC-MS) full scan mode after solid-phase extraction (SPE) of the whole blood sample using Bond-Elut Certify columns. Quantitation of diazepam, was carried out using GC-NPD. No other drugs, including ethanol were detected. Recoveries for benzene, toluene and xylene (mixture of isomers) in whole blood at 5 mg/L were 89.2%, 90.8%, and 93.4%, respectively. Intraday precisions were 5.3%, 5.0%, and 4.9%, while interday precisions were 12.1%, 11.6%, and 11.5%, respectively. Limits of detection (LODs) and limits of quantitation (LOQs) were 0.03 and 0.10 mg/L, respectively. The linearity of the blood calibration curves was excellent with r^2 values of > 0.999 (range 0.1-10 mg/L). Recovery for diazepam in whole blood at 0.5 mg/L was 88.2% with intraday and interday precisions of 2.0% and 10.8%, respectively. LOD and LOQ were 0.006 and 0.020 mg/L, respectively. The linearity of the blood calibration curve was excellent with r^2 values of > 0.999 (range 0.1-2 mg/L). This case documents the importance of considering new or unexpected products that should be taken into account when the surreptitious use of substances in DFSA is suspected.

KEYWORDS: *Aromatic solvents, DFSA case, Analysis*

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