## K29 Yohimbine Quantification in Postmortem Specimens: Two Case Reports

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**Learning Overview:** The goal of this presentation is to describe two postmortem cases in which yohimbine was identified during routine analysis.

**Impact on the Forensic Science Community:** This presentation will impact the forensic science community by adding valuable data for improved interpretation of yohimbine-positive postmortem cases.

Yohimbine is an indole alkaloid, approved in the United States to treat erectile dysfunction. It is also abused on the streets and used as a nutritional supplement among body builders.[1] Yohimbine is a potent $\alpha_2$-adrenoreceptor antagonist, leading to an increase in noradrenaline and dopamine.[2] Yohimbine was identified in two postmortem cases during routine analysis and quantified via a validated Gas Chromatography/Nitrogen Phosphorus Detection (GC/NPD) method.

In the first case, the decedent was a 53-year-old male found alone in his residence. The decedent had no significant medical history; however, he was a known Phencyclidine (PCP), cannabis, and ethanol user. Heart blood, subclavian blood, urine, bile, liver, and kidney were submitted for toxicological analysis. The second case involved a 47-year-old male who was reported missing. The decedent's car was located parked on a bridge, and the decedent was later found 2,000 yards from shore. According to the decedent's mother, the decedent was depressed with previous suicide attempts. He was a known methadone and cocaine user. Cavity blood, urine, bile, liver, and kidney were submitted for analysis. Routine toxicological analysis included volatiles, an acidic/neutral drug screen, an alkaline drug screen, and Enzyme-Linked Immuno-Sorbent Assay (ELISA) for morphine, benzodiazepines, and oxymorphone.

In case 1, the urine drug screen detected PCP and yohimbine; ethanol and other volatiles were not detected in the heart blood. PCP was quantified in the heart blood at 0.1mg/L. Yohimbine in the heart and subclavian blood were 7.3mg/L and 5.3mg/L, respectively (central/peripheral ratio 1.4); additionally, yohimbine in the urine, bile, liver, and kidney were 34mg/L, 11mg/L, 47mg/kg, and 10mg/kg, respectively (liver/central ratio 6.4, kidney/central ratio 1.4). The cause and manner of death were yohimbine intoxication and undetermined, respectively. In the second case, the urine drug screen was positive for several substances; on subsequent analysis, the cavity blood contained cocaine <0.05mg/L, benzoylecgonine, methadone 1.0mg/L (liver methadone 3.4mg/kg), dextromethorphan 0.1mg/L, and mirtazapine 0.06mg/L. Ethanol and other volatiles were not identified. Yohimbine was only identified in the cavity blood and urine at 0.1mg/L and 0.2mg/L, respectively. The cause and manner of death were multiple injuries and drowning and suicide, respectively.

There are few reported postmortem yohimbine data in the literature. In one report of two fatal overdoses, yohimbine was identified in iliac blood at 7.4mg/L (case 1) and heart blood at 5.4mg/L (case 2).[3] In another report, a patient presented to the hospital following ingestion of a large amount of yohimbine and was successfully treated; 3h after ingestion the blood yohimbine concentration was 5.2mg/L.[1] The central and peripheral blood yohimbine concentrations from case 1 presented agree with postmortem concentrations previously reported, while the cavity blood yohimbine concentration in case 2 falls in the range of maximum concentrations observed in controlled administration studies reported elsewhere.[2] Care must be taken when interpreting and comparing postmortem drug concentrations, and postmortem redistribution must always be considered. The data presented indicated yohimbine may be susceptible to redistribution. These data are a valuable addition to the toxicological literature and will help improve interpretation of postmortem yohimbine concentrations.

**References:**

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**Yohimbine, Postmortem Toxicology, Overdose**