



NMS Labs

CONFIDENTIAL

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Toxicology Report

Report Issued 06/02/2023 12:05

To: 146676

Pima County Office of the Medical Examiner
2825 E. District Street

Tucson, AZ 85714

Patient Name Mattia, Raymond

Patient ID 230519-286

Chain 230519-286

DOB 05/17/1965

Sex Male

Workorder 23194197

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Positive Findings:

Analyte	Result	Units	Matrix Source
Ethanol	185	mg/dL	001 - Cardiac Blood
Blood Alcohol Concentration (BAC)	0.185	g/100 mL	001 - Cardiac Blood
Amphetamine	81	ng/mL	001 - Cardiac Blood
Methamphetamine	890	ng/mL	001 - Cardiac Blood
Oxycodone - Free	12	ng/mL	001 - Cardiac Blood
Ethanol	240	mg/dL	003 - Vitreous Fluid

See Detailed Findings section for additional information

Agency Case Number: 23-1802

Testing Requested:

Test	Test Name
8083B	Postmortem, Basic w/Vitreous Alcohol and 6-MAM Confirmation, Blood (Forensic)

Specimens Received:

ID	Tube/Container	Volume/ Mass	Collection Date/Time	Matrix Source	Labeled As
001	Gray Stopper Glass Tube	8.5 mL	05/19/2023 08:30	Cardiac Blood	23-1802
002	Gray Stopper Glass Tube	8 mL	05/19/2023 08:30	Cardiac Blood	23-1802
003	Blue Cap Plastic Tube	5 mL	05/19/2023 08:30	Vitreous Fluid	23-1802

All sample volumes/weights are approximations.

Specimens received on 05/20/2023.

Detailed Findings:

Analysis and Comments	Result	Units	Rpt. Limit	Specimen Source	Analysis By
Ethanol	185	mg/dL	10	001 - Cardiac Blood	Headspace GC
Blood Alcohol Concentration (BAC)	0.185	g/100 mL	0.010	001 - Cardiac Blood	Headspace GC
Amphetamine	81	ng/mL	5.0	001 - Cardiac Blood	LC-MS/MS
Methamphetamine	890	ng/mL	5.0	001 - Cardiac Blood	LC-MS/MS
Ethanol	Confirmed	mg/dL	10	001 - Cardiac Blood	Headspace GC
Oxycodone - Free	12	ng/mL	5.0	001 - Cardiac Blood	LC-MS/MS
Ethanol	240	mg/dL	10	003 - Vitreous Fluid	Headspace GC

Other than the above findings, examination of the specimen(s) submitted did not reveal any positive findings of toxicological significance by procedures outlined in the accompanying Analysis Summary.

Reference Comments:

1. Amphetamine - Cardiac Blood:

Amphetamine (Adderall, Dexedrine) is a central nervous system stimulant. Amphetamine is also a metabolite of methamphetamine, benzphetamine and selegiline. It is used therapeutically in the treatment of narcolepsy and obesity and also in the treatment of attention-deficit hyperactivity disorder (ADHD). Amphetamine has a high potential for abuse. At low doses, amphetamine causes mild stimulation, offset of fatigue, and increase in alertness. It also causes changes in attitude, judgment and impulsivity. At higher doses, amphetamine causes euphoria, excitation, agitation, hypervigilance, rapid speech, dilated pupils which react slowly to light and increased motor restlessness. Pulse and blood pressure may be elevated. Withdrawal from amphetamine following abuse can result in extreme fatigue and uncontrollable sleepiness, agitation, and depression. In the treatment of narcolepsy, amphetamine is administered in daily divided doses of 5 to 60 mg. In abuse doses of several grams may be used on a daily basis in 'runs' lasting a week or more.

Following a single oral dose of 10 mg amphetamine sulfate, a reported peak blood concentration of 40 ng/mL was reached at 2 hr. Following a single 30 mg dose to adults, an average peak plasma level of 100 ng/mL was reported at 2.5 hr. A steady-state blood level of 2000-3000 ng/mL was reported in an addict who consumed approximately 1000 mg daily.

Overdose with amphetamine can produce restlessness, hyperthermia, convulsions, hallucinations, respiratory and/or cardiac failure. Reported blood concentrations in amphetamine-related fatalities ranged from 500-41000 ng/mL (mean 9000 ng/mL).

2. Ethanol (Ethyl Alcohol) - Cardiac Blood:

Ethyl alcohol (ethanol, drinking alcohol) is a central nervous system depressant and can cause effects such as impaired judgment, reduced alertness and impaired muscular coordination. Ethanol can also be a product of decomposition or degradation of biological samples.

3. Ethanol (Ethyl Alcohol) - Vitreous Fluid:

Ethyl alcohol (ethanol, drinking alcohol) is a central nervous system depressant and can cause effects such as impaired judgment, reduced alertness and impaired muscular coordination. Ethanol can also be a product of decomposition or degradation of biological samples.

4. Methamphetamine - Cardiac Blood:

d-Methamphetamine is a DEA schedule II stimulant drug capable of causing hallucinations, aggressive behavior and irrational reactions. Chemically, there are two forms (isomers) of methamphetamine: l- and d-methamphetamine. The l-isomer is used in non-prescription inhalers as a decongestant and has weak CNS-stimulatory activity. The d-isomer has been used therapeutically as an anorexigenic agent in the treatment of obesity and has potent CNS-, cardiac- and circulatory-stimulatory activity. Amphetamine and norephedrine (phenylpropanolamine) are metabolites of methamphetamine. d-Methamphetamine is an abused substance because of its stimulatory effects and is also addictive.

Reference Comments:

A peak blood concentration of methamphetamine of 20 ng/mL was reported at 2.5 hr after an oral dosage of 12.5 mg. Blood levels of 200-600 ng/mL have been reported in methamphetamine abusers who exhibited violent and irrational behavior. High doses of methamphetamine can also elicit restlessness, confusion, hallucinations, circulatory collapse and convulsions.

*In this case, the level of methamphetamine determined has not been differentiated according to its isomeric forms. Differentiation of the isomers of methamphetamine is available upon request.

5. Oxycodone - Free (OxyContin®; Roxicodone®) - Cardiac Blood:

Oxycodone is a DEA Schedule II controlled semi-synthetic narcotic analgesic. It is used to control pain associated with such ailments as bursitis, injuries, simple fractures and neuralgia. The addiction liability of oxycodone is about the same as for morphine. This analyte should be administered in the smallest effective dose and as infrequently as possible. The usual adult dose of the hydrochloride salt is 5 mg every 6 hr.

Following the oral administration of oxycodone as both sustained-release (Oxycontin®) and regular formulations, peak plasma concentrations of the analyte are generally less than 100 ng/mL; however, the sustained-release preparation may also result in peak concentrations of oxycodone less than 10 ng/mL serum. Oxymorphone is a pharmacologically active metabolite of oxycodone that may be seen in blood in very low concentrations.

In overdose, oxycodone can produce stupor, coma, muscle flaccidity, severe respiratory depression, hypotension and cardiac arrest. In twelve oxycodone-related deaths, blood concentrations averaged 1600 ng/mL (range 240 to 8400 ng/mL). However, sustained-release preparations appear to produce adverse reactions, up to and including death, at concentrations of oxycodone well below 1000 ng/mL, especially in combination with other central nervous system depressants, depending on use pattern and route of administration.

Sample Comments:

001 Physician/Pathologist Name: Paige Peterson

Unless alternate arrangements are made by you, the remainder of the submitted specimens will be discarded one (1) year from the date of this report; and generated data will be discarded five (5) years from the date the analyses were performed.

Workorder 23194197 was electronically
signed on 06/02/2023 11:17 by:



Emily M. Fenton, MBA, MSFS
Forensic Toxicologist

Analysis Summary and Reporting Limits:

All of the following tests were performed for this case. For each test, the compounds listed were included in the scope. The Reporting Limit listed for each compound represents the lowest concentration of the compound that will be reported as being positive. If the compound is listed as None Detected, it is not present above the Reporting Limit. Please refer to the Positive Findings section of the report for those compounds that were identified as being present.

Test 50002B - Amphetamines Confirmation, Blood - Cardiac Blood

-Analysis by High Performance Liquid Chromatography/ Tandem Mass Spectrometry (LC-MS/MS) for:

Analyte	Rpt. Limit	Analyte	Rpt. Limit
Amphetamine	5.0 ng/mL	MDMA	5.0 ng/mL
MDA	5.0 ng/mL	Methamphetamine	5.0 ng/mL

Test 52249B - Alcohols and Acetone Confirmation, Blood (CSA) - Cardiac Blood

Analysis Summary and Reporting Limits:

-Analysis by Headspace Gas Chromatography (GC) for:

<u>Analyte</u>	<u>Rpt. Limit</u>	<u>Analyte</u>	<u>Rpt. Limit</u>
Acetone	5.0 mg/dL	Isopropanol	5.0 mg/dL
Ethanol	10 mg/dL	Methanol	10 mg/dL

Test 52316B - Opiates - Free (Unconjugated) Confirmation, Blood (Forensic) - Cardiac Blood

-Analysis by High Performance Liquid Chromatography/ Tandem Mass Spectrometry (LC-MS/MS) for:

<u>Analyte</u>	<u>Rpt. Limit</u>	<u>Analyte</u>	<u>Rpt. Limit</u>
6-Monoacetylmorphine - Free	1.0 ng/mL	Hydromorphone - Free	1.0 ng/mL
Codeine - Free	5.0 ng/mL	Morphine - Free	5.0 ng/mL
Dihydrocodeine / Hydrocodol - Free	5.0 ng/mL	Oxycodone - Free	5.0 ng/mL
Hydrocodone - Free	5.0 ng/mL	Oxymorphone - Free	1.0 ng/mL

Test 53249FL - Alcohols and Acetone Confirmation, Vitreous Fluid (Forensic) - Vitreous Fluid

-Analysis by Headspace Gas Chromatography (GC) for:

<u>Analyte</u>	<u>Rpt. Limit</u>	<u>Analyte</u>	<u>Rpt. Limit</u>
Acetone	5.0 mg/dL	Isopropanol	5.0 mg/dL
Ethanol	10 mg/dL	Methanol	10 mg/dL

Test 8083B - Postmortem, Basic w/Vitreous Alcohol and 6-MAM Confirmation, Blood (Forensic) - Cardiac Blood

-Analysis by Enzyme-Linked Immunosorbent Assay (ELISA) for:

<u>Analyte</u>	<u>Rpt. Limit</u>	<u>Analyte</u>	<u>Rpt. Limit</u>
Amphetamines	20 ng/mL	Fentanyl / Acetyl Fentanyl	1.0 ng/mL
Barbiturates	0.040 mcg/mL	Methadone / Metabolite	25 ng/mL
Benzodiazepines	100 ng/mL	Methamphetamine / MDMA	20 ng/mL
Buprenorphine / Metabolite	0.50 ng/mL	Opiates	20 ng/mL
Cannabinoids	10 ng/mL	Oxycodone / Oxymorphone	10 ng/mL
Cocaine / Metabolites	20 ng/mL	Phencyclidine	10 ng/mL

-Analysis by Headspace Gas Chromatography (GC) for:

<u>Analyte</u>	<u>Rpt. Limit</u>	<u>Analyte</u>	<u>Rpt. Limit</u>
Acetone	5.0 mg/dL	Isopropanol	5.0 mg/dL
Ethanol	10 mg/dL	Methanol	10 mg/dL