

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

Ephedrine	None Detected	ng/mL
Pseudoephedrine	None Detected	ng/mL
Phenylpropanolamine	None Detected	ng/mL
Norpseudoephedrine	None Detected	ng/mL
Amphetamine	None Detected	ng/mL
MDMA	None Detected	ng/mL
MDEA	None Detected	ng/mL
Phentermine	None Detected	ng/mL
Methamphetamine	7.7	ng/mL
MDA	None Detected	ng/mL

Case courtesy of Fabiola Righi, DO

1. The decedent is a 57 y/o male with history of early Parkinson's disease and obstructive sleep apnea who reportedly woke up in the middle of the night vomiting, coughing and gurgling, and was witnessed to become unresponsive. His postmortem toxicology results included the findings in the figure above.

What is the most likely interpretation of the toxicology findings?

- Recent illicit drug use
- Related to prescription medication for ADHD
- Related to prescription medication for Parkinson's disease
- False positive result
- Recent ingestion of poppy seeds

A. Recent illicit drug use (32.24% of responses)

In a case with recent methamphetamine use, quantities are generally expected to be much higher than seen in this case, and it would be expected that both methamphetamine and its metabolite, amphetamine, would be present.

B. Related to prescription medication for ADHD (12.02% responses)

The treatment of attention deficit/hyperactivity disorder commonly includes amphetamine-based medicine. In these patients, toxicology would be expected to be positive for amphetamine alone, but not methamphetamine.

C. Related to prescription medication for Parkinson's disease (correct answer, 43.17% responses)

The decedent had recently been switched from Selegiline to Amantadine for management of his Parkinson's disease. Selegiline is a selective MAO-B inhibitor commonly used in early Parkinson's patients with the goal of delaying the start of disability and progression of symptoms. Selegiline is metabolized to several metabolites including N-desmethylselegiline, l-methamphetamine and l-amphetamine (see attached diagram). Metabolism of Selegiline produces a specific enantiomer that is different from the one seen when methamphetamine is used as a drug of abuse, but standard confirmatory assays are unable to differentiate between the two enantiomers. Immunoassays or stereoselective chromatographic methods can be used to differentiate between the two, although these are not commonly performed tests.

D. False positive result (10.38% responses)

The results listed are noted to be from an analysis performed by high-performance liquid chromatography/tandem mass spectrometry (LC-MS/MS), which is a confirmatory assay with high sensitivity and specificity, therefore it is unlikely that this result is a false positive.

E. Recent ingestion of poppy seeds (2.19% responses)

Excessive ingestion of poppy seeds has been reported to cause positive results on opiate testing. There is no known association between ingestion of poppy seeds and a positive drug test for methamphetamine.

References

[https://journals.lww.com/drug-monitoring/fulltext/2010/02000/poppy seed foods and opiate drug testing where are.3.aspx](https://journals.lww.com/drug-monitoring/fulltext/2010/02000/poppy_seed_foods_and_opiate_drug_testing_where_are.3.aspx)

[https://journals.lww.com/joem/Fulltext/2002/05000/Precursor Medications as a Source of.12.aspx](https://journals.lww.com/joem/Fulltext/2002/05000/Precursor_Medications_as_a_Source_of.12.aspx)

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