



# Mitragynine/kratom as a Cause of Death in a Forensic Case

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## Background

- Mitragynine and 7-hydroxy mitragynine are psychoactive alkaloid components of the plant *Mitragyna speciosa*, also known as kratom. The use of mitragynine as a recreational drug and/or self-medication for opioid withdrawal has been increasing in the United States.
- Mitragynine exerts its central nervous system effect through modulation of monoamine and mu-opioid receptors. There are case reports of overdose of mitragynine causing respiratory depression, seizure, psychosis, and death.
- However, there is no consensus as to the lethal dose. While post-mortem mitragynine blood concentrations in fatalities have ranged from 20 to 600 ng/ml, there is a recent case report with a level of 4310 ng/ml.

## Case Report

- Herein, we present the case of a 49-year-old female who was found by her husband struggling to breathe and later dying before she could receive medical attention. The deceased had a history of chronic pain and seizures medicated with Protonix, alprazolam, Depakote, hydrocodone, amitriptyline, and Latuda.
- Post-mortem cardiac blood toxicology was significant for a mitragynine concentration of 4400 ng/ml and a hydrocodone concentration of 420 ng/ml.
- The high concentration of mitragynine, in addition to that of hydrocodone, indicates that the cause of death is intoxication by mitragynine and hydrocodone.

## Conclusion

- With the increasing reports of death from an overdose of mitragynine (alone or in combination with other drugs), rapid screening methods should be developed in addition to the sophisticated gas chromatography.
- Our case also highlights the need for more studies regarding the toxicity of mitragynine, development of consensus as to the lethal dose, and treatment of overdose and withdrawal.

## References

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