

Pain management drugs are very common in the drug market. Usually accessed through prescription, misuse, addiction, and abuse are very common problems with pain management drugs. Recent headlines have brought one particular pain management drug to the forefront: Fentanyl. According to the CDC, Fentanyl is a synthetic opioid that is up to 50 times stronger than heroin and 100 times stronger than morphine. Mass quantities of this opioid are being shuttled across the border into the United States and there has been an uptick in overdoses. Being able to detect minute quantities of pain management drugs like Fentanyl in various biological matrices efficiently and accurately could mean the difference between life and death.



Previously, pain management drugs were measured using immunoassays such as enzyme-linked immunosorbent assay (ELISA), but there is a high frequency of interference from the sample matrix, along with a lack of specificity. Advancements in both the chromatography and sample clean-up have made it less difficult to develop accurate methods and shorter analysis times.² LC-MS/MS provides a highly sensitive and specific approach to determining the concentrations of structurally related molecules and offers a robust platform with high sensitivity and specificity for measuring pain management drugs simultaneously.

Urine drug testing has widely been accepted as the gold standard for identifying the misuse and abuse of opioid drugs.² However, it isn't always convenient to retrieve a urine sample and so other matrices, such as whole blood and serum, have been used for detection. All of these matrices have complexities that must be addressed as a clean-up step prior to LC-MS/MS analysis in order to get highly sensitive and accurate results from small sample sizes.



As more cases of opioid and other pain management drug misuse and abuse arise, a quick and accurate detection method may increase survival rate. Having several different biological matrices to use for detection will provide multiple avenues in the event that one type of sample may be more difficult to collect than another. By understanding the components and complexities of these matrices, clean-up of the samples can become more efficient and more accurate detection achieved.

If detection of pain management drugs are of interest to you and your next application, check out these sources:

[Application Guide for Researching Pain Management Drugs](#)

[Pain Panel Research and Solutions](#)

References

1. <https://www.cdc.gov/stopoverdose/fentanyl/index.html#:~:text=Fentanyl%20is%20a%20synthetic%20opioid,fentanyl%20and%20illicitly%20manufactured%20fentanyl>.

2. Milone, M. (2012). Laboratory Testing for Prescription Opioids. *Journal of Medical Toxicology*, 8(4), 408-416. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3550258/>

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