

# Quetiapine, A Novel Additive to the Illicit Heroin Supply in Los Angeles

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## INTRODUCTION

- Based on data from a drug checking program in Los Angeles CA, we found quetiapine as a novel additive to heroin.
- Quetiapine and its metabolites exert dosage-dependent antipsychotic, antidepressant, and sedative effects due to its complex receptor interactions including D2, 5HT2A, 5HT2C and Alpha2 antagonism, 5HT1A agonism, and norepinephrine reuptake inhibition.
- Previous literature has described the “street value” of quetiapine in carceral and other settings and note its intentional use in polysubstance mixtures<sup>5-8</sup>.
- To our knowledge, no study has previously documented unintentional quetiapine use via its addition to illicit opioids.

## METHODS

- Data from a community-based drug checking program in Los Angeles, California operated at several sites around the county.
- Final substance determination was performed through confirmatory mass spectrometry testing; the substance and/or related paraphernalia were swabbed with a cotton-tipped applicator or paper wipe and submitted to the National Institute of Standards and Technology (NIST) for analysis with direct analysis in real time mass spectrometry (DART-MS).
- Resulting spectra were compared to a library of over 1,300 compounds including psychoactive substances and cutting/bulking agents.
- Clients also completed a survey containing questions about sociodemographic information and expected drug contents.

## RESULTS

	Quetiapine Absent	Quetiapine Present	Overall	P-value
	(N=39)	(N=13)	(N=52)	
<b>Sociodemographic Characteristics</b>				
<b>Gender</b>				
Cisgender man	30 (76.9%)	8 (61.5%)	38 (73.1%)	0.776
Cisgender woman	2 (5.1%)	2 (15.4%)	4 (7.7%)	
Other/Declined	7 (17.9%)	3 (23.1%)	10 (19.2%)	
<b>Race/Ethnicity</b>				
Black or African American	1 (2.6%)	1 (7.7%)	2 (3.8%)	0.969
Hispanic	24 (61.5%)	6 (46.2%)	30 (57.7%)	
White	5 (12.8%)	2 (15.4%)	7 (13.5%)	
Other/Declined	9 (23.1%)	4 (30.8%)	13 (25.0%)	
<b>Housing Status</b>				
Housed	17 (43.6%)	3 (23.1%)	20 (38.5%)	0.355
Unhoused	9 (23.1%)	7 (53.8%)	16 (30.8%)	
Declined	13 (33.3%)	3 (23.1%)	16 (30.8%)	
<b>Sample Characteristics</b>				
<b>Tried Sample Before Testing</b>				
No	9 (23.1%)	5 (38.5%)	14 (26.9%)	0.87
Yes	17 (43.6%)	5 (38.5%)	22 (42.3%)	
Declined	13 (33.3%)	3 (23.1%)	16 (30.8%)	
<b>Substance(s) Expected</b>				
Heroin	25 (64.1%)	8 (61.5%)	33 (63.5%)	0.948
Fentanyl	2 (5.1%)	0 (0%)	2 (3.8%)	
Fentanyl And Heroin	5 (12.8%)	1 (7.7%)	6 (11.5%)	
Declined/Other	7 (17.9%)	4 (30.8%)	11 (21.2%)	
<b>Testing Results</b>				
Fentanyl	27 (69.2%)	4 (30.8%)	31 (59.6%)	0.05
Xylazine	5 (12.8%)	0 (0%)	5 (9.6%)	0.398
Methamphetamine	7 (17.9%)	1 (7.7%)	8 (15.4%)	0.674
Cocaine	0 (0%)	1 (7.7%)	1 (1.9%)	0.217

## CONCLUSION

- In contrast to previous studies finding intentional quetiapine use together with stimulants, we find quetiapine added to black tar heroin, unbeknownst to the end consumer.
- The presence of quetiapine was associated with fewer other adulterants (represent fentanyl, xylazine, and methamphetamine). Quetiapine augmentation may represent an alternative, lower-risk strategy to fentanyl addition.
- Possible risks of unintentional quetiapine use include sedation, weight gain, akathisia, and more complex withdrawal syndromes. There is no evidence of increased opioid overdose risk.
- This analysis is exploratory, has a small sample size. Further confirmatory studies are needed.
- For comparison, as of February 2025, the UNC Street Drug Analysis Lab had identified n=8 quetiapine positive samples in their mail-in drug checking service. Of these n=6 also contained heroin from n=4 states (CA, MI,WI,NC).

## AUTHORS & DISCLOSURES

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All authors declare no conflicts of interest.

## REFERENCES

- Park JN, Schneider KE, Fowler D, Sherman SG, Mojtabai R, Nestadt PS. Polysubstance Overdose Deaths in the Fentanyl Era: A Latent Class Analysis. *Journal of Addiction Medicine*. 2022;16(1):49. doi:10.1097/ADM.0000000000000823
- Friedman J, Shover CL. Charting the fourth wave: Geographic, temporal, race/ethnicity and demographic trends in polysubstance fentanyl overdose deaths in the United States, 2010–2021. *Addiction*. 2023;118(12):2477–2485. doi:10.1111/add.16318
- Cabaleiro T, López-Rodríguez R, Román M, et al. Pharmacogenetics of quetiapine in healthy volunteers: association with pharmacokinetics, pharmacodynamics, and adverse effects. *International Clinical Psychopharmacology*. 2015;30(2):82. doi:10.1097/YIC.0000000000000047
- Andersen FD, Joca S, Hvingelby V, et al. Combined effects of quetiapine and opioids: A study of autopsy cases, drug users and sedation in rats. *Addiction Biology*. 2022;27(5):e13214. doi:10.1111/adb.13214
- Kim S, Lee G, Kim E, Jung H, Chang J. Quetiapine misuse and abuse: Is it an atypical paradigm of drug seeking behavior? *J Res Pharm Pract*. 2017;6(1):12. doi:10.4103/2279-042X.200987
- Tcheremissine OV. Is quetiapine a drug of abuse? Reexamining the issue of addiction. *Expert Opinion on Drug Safety*. 2008;7(6):739–748. doi:10.1517/14740330802496883
- Vento AE, Kotzalidis GD, Cacciotti M, et al. Quetiapine Abuse Fourteen Years Later: Where Are We Now? A Systematic Review. *Substance Use & Misuse*. 2020;55(2):304–313. doi:10.1080/10826084.2019.1668013
- Haridas A, Kushon D, Gurmu S, Oluwabusi O. Smoking Quetiapine: A “Maq Ball”?
- Appley MG, Robinson EL, Thomson A, Russell E, Sisco E. An Analytical Platform for Near Real-Time Drug Landscape Monitoring using Paraphernalia Residues. Published online December 16, 2022. doi:10.26434/chemrxiv-2022-bd64n
- Shover CL, Godvin ME, Appley M, et al. Rapid emergence of UV stabilizer Bis(2,2,6,6-tetramethyl-4-piperidyl) sebacate (BTMPS) in the illicit fentanyl supply across the United States in July–August 2024: Results from drug and drug paraphernalia testing. Published online September 16, 2024:2024.09.13.24313643. doi:10.1101/2024.09.13.24313643
- Cubata WJ, Springer J. Quetiapine abuse and dependence in psychiatric patients: a systematic review of 25 case reports in the literature. *Journal of Substance Use*. 2014;19(5):388–393. doi:10.3109/14659891.2013.810309
- UNC Street Drug Analysis Lab. UNC Street Drug Analysis Lab. Accessed February 7, 2025. <https://www.streetsafe.supply/search?q=quetiapine>