Xylazine test strips performance in synthetic and human urine biospecimens

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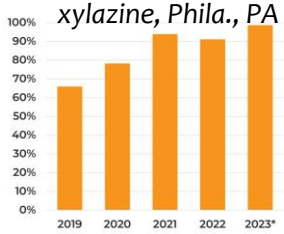
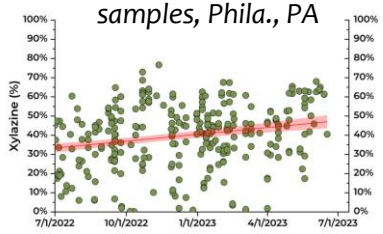
Introduction

Opioid samples containing xylazine, Phila., PA



Xylazine content in opioid samples, Phila., PA



Ref. DeBord, J., et. al. Drug Checking-Quaterly report (2023), CFSRE, NPS

- ✓ Xylazine, a veterinary tranquilizer is increasingly linked with adulteration of illicit opioids in the US.
- ✓ Recent reports indicate the growing prevalence of xylazine detection in street drug samples.
- ✓ MS-based methods are the gold standard method for xylazine confirmation but are time intensive which may delay interventions.
- ✓ We hypothesized that xylazine test strips in urine could serve as a rapid, point-of-care test to detect xylazine exposure

Methods

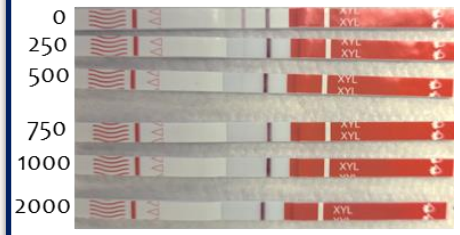
Xylazine tests strips from BTNX

Six synthetic urine samples spiked with xylazine standards at different conc. and 36 human urine samples were tested to evaluate strip sensitivity and specificity. Quantitative data was obtained from an in-house GC-MS method for xylazine . Urine samples were tested within 1-13 days after collection and kept at 5 °C until analyzed.

Results & Discussion

❑ Qualitative analysis using Xylazine test strips

Synthetic xylazine (ng/mL)

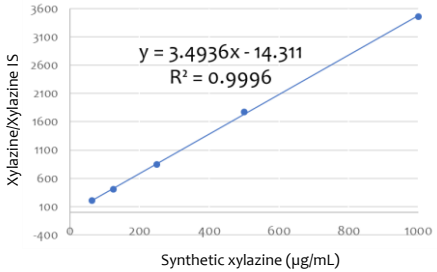


Experiments indicate a cutoff point between (**500-750** ng/mL) which is lower than the one established by the manufacturer (**1000** ng/mL).

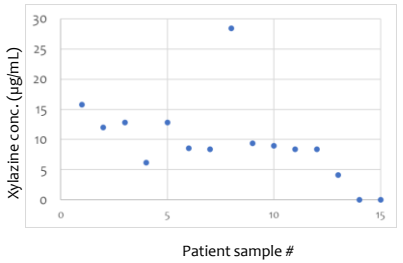
Patient samples

Results from xylazine detected in patient urine samples submitted for UDS analysis.

❑ Quantitative analysis using a GC-MS method for xylazine

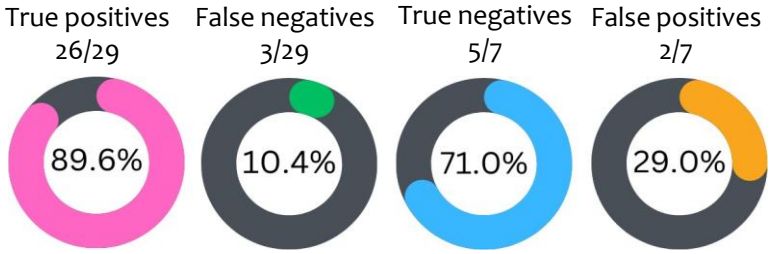


Calibration curve obtained from synthetic xylazine spiked in synthetic urine using GC-MS based method. Linear response is observed with increasing amounts of the drug.



Distribution of xylazine concentrations in urine collected in 15 exposed patients

❑ Xylazine test strip performance



- ✓ The false negatives resulted from the lower sensitivity of the xylazine strip compared to GC-MS, which reported to be <0.02 µg/mL
- ✓ One out of the two false positives also tested positive for lidocaine, a known interference reported for the strip.
- ✓ The second false positive is of unknown origin. Interference study carried out with co-detected drugs is shown in the table.

Drug	Concentration	Result (n=3)
cocaine	20 000 ng/mL	neg
benzoylecgonine	20 000 ng/mL	neg
diphehydramine	20 000 ng/mL	neg
nicotine	20 000 ng/mL	neg
cotinine	20 000 ng/mL	neg

Conclusions

Xylazine test strips detected xylazine at a concentration of >750ng/mL in synthetic urine spiked with xylazine and showed moderate sensitivity and lower specificity in detecting xylazine in urine collected in exposed patients. Testing urine with xylazine test strips could be a feasible approach to rapid, point-of-care testing for xylazine exposure in clinical settings and should be rigorously explored.