

## Xylazine

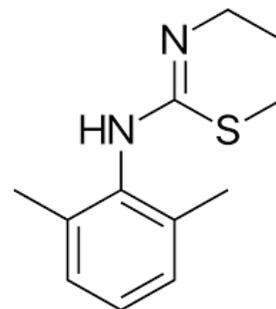
On October 30, 2018, Anne Arundel County (Maryland) police announced that they had confiscated a large amount of drugs in a major drug bust and arrested 21 people. Besides fentanyl, heroin and cocaine, 8.86 kilograms of xylazine were seized. What is xylazine?

Xylazine is a veterinary sedative, muscle relaxant and analgesic sold as Anased<sup>®</sup>, Cervizine<sup>®</sup>, Chanazine<sup>®</sup>, Rompun<sup>®</sup>, Sedazine<sup>®</sup>, XylaMed<sup>®</sup>, and as generic xylazine. It is a potent alpha-2 adrenergic receptor agonist that is structurally similar to clonidine and the phenothiazines. It is not approved for use in humans and is not designated as a controlled drug in the United States. It has been identified primarily as a contaminant in heroin and fentanyl to enhance the effects or increase bulk, but also has been used with cocaine and mixed with "speedball" (heroin + cocaine). Some users purchase xylazine in separate packages to add to drugs in a controlled ratio, some knowingly buy drugs premixed with xylazine, and others are unaware that the drugs they purchased are contaminated with xylazine.

The use of xylazine as a drug of abuse was reported in Puerto Rico in the early 2000's where it is known on the street as "Anestesia de Caballo" (Horse Anesthetic). Analyses of syringes and surveys of drug users on the island from 2005-2007 showed that the use of xylazine was widespread. More than 37% of syringes tested positive for xylazine, while 80.7% of a sample of 89 drug users reported using xylazine (*Drug Alcohol Depend* 2008;96:290-3; *J Urban Health* 2012;89:519-26). Around that same time, xylazine was detected stateside. In 2006, the Philadelphia Medical Examiner's Office identified xylazine and fentanyl in 7 deaths (*J Forensic Sci* 2008;53:495-8).

The pharmacokinetics of xylazine in humans have not been determined. Based on animal studies and case reports, the onset with parenteral xylazine is expected to be within 30 minutes. Although the duration of effects in animals is 4 hours, duration was 8-72 hours in human case reports. Clinical effects that may occur with xylazine exposures include drowsiness, slurred speech, coma, hyporeflexia, transient hypertension and tachycardia followed by hypotension and bradycardia, dysrhythmias, respiratory depression, miosis, hyperglycemia, and hypothermia. Deaths have been reported.

Most xylazine overdoses do well with supportive care (e.g. intubation, IV fluids). Severe bradycardia and hypotension may be treated with atropine, cardiac pacing, norepinephrine or dopamine. Paradoxical hypertension secondary to xylazine is transient and may be followed by hypotension. Therefore, aggressive therapy with antihypertensive agents should be avoided. Although naloxone has not been reported to reverse toxicity with xylazine, it has been effective in some clonidine overdoses in doses of 2 mg or higher. In addition, naloxone may reverse respiratory depression because opioids are likely to also be involved. Tolazoline, a mixed alpha-1 and alpha-2 adrenergic receptor antagonist, has been used in animals as a xylazine antidote but there is no information on using it in humans. Serum and urine xylazine tests are not widely available and are not helpful in determining toxicity or directing treatment.



### Did you know?

**Xylazine was detected in 56 overdose deaths in MD in 2018.**

Maryland's Office of the Chief Medical Examiner has been testing for xylazine for a number of years. From 2006 through 2018, there were 83 cases that were positive for xylazine. In 2018 alone, there were 56 cases, a 331% increase from the year before. Fentanyl was also detected in 80 of the xylazine positive cases, while heroin and/or morphine were positive in 52 cases and cocaine in 28 cases.



@MPCToxTidbits

Lisa Booze, PharmD, CSPI