

<https://www.fda.gov/science-research/advancing-regulatory-science/characterization-impact-xylazine-and-dexmedetomidine-pharmacological-profile-addictive-behaviors-and>

Characterization of the impact of xylazine and dexmedetomidine: pharmacological profile, addictive behaviors, and physiological effects, including wound development

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Regulatory Science Challenge

The unregulated drug supply is an ever-changing chemical landscape with novel additives that are often unknown to both the end users, as well as clinicians and public health officials. One such compound, xylazine, is now detected in the unregulated drug supply at alarming levels. In addition, there remain concerns that xylazine in combination with fentanyl leads to increased drowsiness, increased respiratory distress, and the development of difficult to treat wounds. Researchers and medical professionals currently do not know how xylazine contributes to addictive behaviors and other physiological problems; thus, the principle aim of this research ultimately will determine how xylazine influences fentanyl-related behaviors and physiology. Dexmedetomidine, a closely related FDA approved drug (in medical settings), which is emerging as another adulterant to fentanyl, will also be investigated for its effects compared to xylazine.

Project Description and Goals

This project uses pharmacological approaches including cellular assays and rodent models to examine how xylazine and dexmedetomidine impact physiological functions. This multifaceted study will examine how these drugs interact with receptors in the body, how they affect brain function, and how they influence fentanyl's effects. The effects of xylazine on the physical dependence and withdrawal syndrome associated with fentanyl are currently unknown. Data will be collected from cellular assays, behavioral tests in rats and mice, analysis of respiration, and analysis of skin wound development (thought to be associated with the combined use of fentanyl and xylazine in humans) and healing of skin tissue. Investigators plan to present data from this project at scientific conferences and publish findings in peer-reviewed journals.