Science POP

Communiqué de presse

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Profils de signalisation des opioïdes trouvés dans la rue
How bad are the worst street opioids?

The opioid crisis is getting worse each year. It's evolved from prescription pills, to heroin, to fentanyl and synthetically derived drugs. With this novelty comes many unanswered questions. Primarily, how bad are these drugs? Which ones are the worst? How do they compare to the opioids we do know? Finding the answers to these questions often takes years of clinical research, and many pointless fatalities. Using our lab's technology, we can answer these questions in a couple of days to weeks in a cheap, reproducible way, where the only lives lost are cells on petri dishes.

Opioids are powerful pain relievers, but they also come with a host of potential side effects, such as breathing difficulties and drowsiness. We wanted to see if we could use information about how these drugs work on a cellular level – known as their "signaling profiles" – to predict their side effects. But how we can predict potential side effects, when we don't have enough data from clinical trials? Our research team has been working on this problem, focusing on the prescription opioids that have decades of clinical data. We started by looking at six well-known prescription opioids, like morphine and fentanyl. We then grouped these drugs based on their signaling profiles and compared them to new, less-studied compounds. We then used this information to estimate the frequency of side effects for the new compounds, focusing on fatal side effects, like breathing difficulties and drowsiness.

With this technology we can easily recognize innocuous, moderately, and highly dangerous street opioids. By looking at the similarities between the signaling profiles of known and new drugs, we could make educated guesses about the potential side effects of the new compounds. Although this method doesn't replace the need for clinical trials, it's a promising first and quick step towards predicting the potential side effects of new drugs.

By using signaling profiles to understand how drugs work, we can make better-informed decisions about drug development and patient care. This technology could also be applied to identify cannabis products and their risk in terms of psychosis and/or driving impairment.

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