Prevalence of Concurrent Detection of Novel Psychoactive Substances and Antipsychotics Treatment

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Introduction

- Drug abuse and related overdose are globally alarming situations. Illicit substance use remains an ongoing challenge for policy-makers and countries worldwide.
- Novel psychoactive substances (NPS) are considered to be any new (primarily synthetic) psychotropic or neurotropic compound.
- NPS are often called "designer drugs", "legal highs" or "research drugs" and have very diverse nature and compositions.
- NPS are known to mimic adverse and threatening effects of traditional illegal drugs; however, they may or may not be controlled by international drug conventions.
- The diverse nature and compositions of NPS impede detection via traditional definitive testing techniques. Hence, NPS pose a difficult challenge to clinicians and researchers, as well as a large threat to public health.
- As drug control laws evolve, the NPS are also increasingly being designed and distributed. This increase has further complicated the challenge of drug detection and the potential for abuse and/or drug overdose.
- To help clinicians better understand what NPS their patients may be using, Aegis offers NPS analysis for over 160 compounds in urine and oral fluid samples.
- Analyzed NPS classes include: Designer Opioids, Designer Benzodiazepines, Synthetic Cannabinoids, Synthetic Stimulants and other NPS (hallucinogens/disociatives).
- NPS use is often linked with substance use disorders (SUD). Serious mental illnesses (SMI) such as depression, schizophrenia, bipolar disorder and other mental disorders have also been linked to SUD.

Methods

Sample preparation
- Hydrolysis with liquid-liquid extraction followed by evaporation and reconstitution
- LC-MS/MS: reverse phase, Restek Raptor Biphippy 100x3mm, 2.7µm column

Data Analysis/Interpretation
- SCIEX MultiQuant™ 2.1.2

Results

% Co-Positivity of NPS Analytes with Antipsychotics

<table>
<thead>
<tr>
<th>Class</th>
<th>Most prevalent co-positive NPS</th>
<th>Fluoro-fentanyl (56%)</th>
<th>Despropionyl FF (43%)</th>
<th>MDMB-4en PINACA (27%)</th>
<th>SF-MDMB PICA (20%)</th>
<th>Ethylone (80%)</th>
<th>Fluoralprazolam (37%)</th>
<th>Bromazolam (29%)</th>
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<tbody>
<tr>
<td>Designer Opioids</td>
<td>38% (N=106)</td>
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<td>Synthetic Cannabinoids</td>
<td>32% (N=68)</td>
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<td>Synthetic Stimulants</td>
<td>19% (N=52)</td>
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<td>Designer Benzodiazepines</td>
<td>9% (N=25)</td>
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<td>Other NPS</td>
<td>3% (N=8)</td>
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Conclusions

- Co-positivity of NPS and Antipsychotics are detected in patients from a variety of age groups with males being more likely to be consuming NPS with an antipsychotic drug.

Clinical Significance

- Detection of NPS in the presence of antipsychotics supports the concerns associated with SMI and SUD co-morbidity.
- The negative impact on medication adherence and potential overdose cases as major risk factors for individuals with behavioral health conditions that consume NPS drugs.
- NPS use may aggravate symptoms of mental illnesses, such as schizophrenia or bipolar disorder, and may further enhance psychiatric distress.
- NPS testing in chronic pain and behavioral health populations provides valuable information that can identify potentially problematic substance use and help clinicians improve treatment and deliver the best care.

References


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