this behaviour. The key social and psychological drivers of IPEDs use will be presented, with an emphasis on availability, accessibility, and patterns of use. Lastly, the existing legislative and policy measures to tackle IPEDs use in recreational sport will be reviewed. Drawing on international research projects and policy initiatives, the talk will discuss novel evidence-informed preventive strategies focusing on building positive psychological characteristics (e.g., mindfulness, acceptance, and self-compassion), and on developing a systems-based approach that involve multiple stakeholders, including National Anti-Doping Organisations, public health authorities, and the fitness industry.

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New Psychoactive Substances (NPS) Trends in the United States

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Introduction: New psychoactive substances (NPS) have continually evolved since appearing in the United States in 2009. The timely dissemination of information outlining the NPS currently in the market provides useful information to the law enforcement and health communities. This presentation will illustrate NPS identifications and trends tracked by Drug Enforcement Administration's (DEA) laboratory system.
Methods: Data was collected for this analysis through a query of archived seizure and analysis information. The information targeted in this query included the date and location of the seizure and substances identified during the chemical analysis performed by the eight DEA chemistry laboratories. These seizure details and analytical results are used to compile drug intelligence, detect the appearance of new drugs of abuse, and monitor drug trends.
Results: The most prevalent NPS identified in the United States fall within the categories of synthetic cannabinoids, cathinones, and opioids. Other chemical classes identified during the first half of CY 2023 include benzodiazepines, tryptamines, hallucinogens, and several other classes. Particular attention will be paid to the current opioid market in the United States.
Conclusions: Due to the ever-changing nature of NPS, the criminal justice system is confronted with a unique set of challenges. Understanding the current trends and monitoring the emergence of NPS within the United States enables the health, forensic, enforcement, and legislative communities to be better prepared to fight the NPS epidemic.

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Evolution of the Brazilian Drug Control System: Case Study of ADB-FUBIATA, a Psychotropic NPS

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Introduction: The New Psychoactive Substances (NPS) market is very dynamic, requiring new legislative approaches to tackle the drug problem. Brazil has improved the Drug Scheduling System, making the process more agile, which allows fast scheduling of NPS. The Working Group conceived between Anvisa and the Ministry of Justice, brings together experts of health regulation, forensics, law enforcement and drug policy, and posed a significant role in evolving the Brazilian Drug Control System.
Methods: The Working Group created an online form to facilitate and accelerate drug notification from brazilian Police. Through this tool, in 11/19/2021, Anvisa received a communication regarding the synthetic cannabinoid ADB-FUBIATA, a psychotropic NPS. This molecule was also reported in Brazilian Early Warning System.
Results: ADB-FUBIATA is now a prohibited substance. The ban took place about two months after the drug notification.
Conclusions: The NPS market continues to shift and diversify at an alarming speed, posing a significant risk to public health and a challenge to drug policy. Brazil has made substance scheduling faster through the implementation of an online notification form and the establishment of an Early Warning System. ADB-FUBIATA is an example of improved communication between those involved with the drug problem.

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The Synthetic Cannabinoids ADB-FUBINACA Modulate Mitochondrial Function and Dynamics at Biologically Relevant Concentrations During In Vitro Neurodifferentiation

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Synthetic cannabinoids (SCs) pose a significant risk to neurodevelopment, as they may disrupt the proper brain development by interfering with the endocannabinoid system. Previously, we demonstrated that the SC ADB-FUBINACA (ADB) enhances neurodifferentiation of NG108-15 neuroblastoma x glioma hybrid cells via CB1 receptor activation. Interestingly, the influence of mitochondria on cellular homeostatic responses has emerged as a central regulator of neural stem cell fate. Thus, here we aimed to evaluate the effects of this SC on mitochondrial function and dynamics during in vitro neurodifferentiation. NG108-15 cells were differentiated in serum-starved (1% FBS) cell culture medium supplemented with 30μM retinoic acid and 10μM forskolin. ADB was added once at the beginning of differentiation at in vivo relevant concentration (between 1 pM and 1 μM). Mitochondrial membrane potential (assessed by TMRE labelling) and intracellular ATP levels (luciferase-based luminescence assay) were evaluated after 24h and 72h. Specific cell-permeable or cell-impermeable CB1R antagonists/ inverse agonists (SR141716A and hemopressin, respectively) were added 20 minutes prior to ADB exposure to assess the role of CB1R in the observed effects. The expression of the mitochondrial fission marker dynamin-related protein 1 (DRP1), fusion marker mitochondrial dynamin-like GTPase (OPA1), and Voltage-dependent anion channel (VDAC) was analyzed by Western-blot at 24 or 72h. ADB (1pM and 1nM) reduced intracellular ATP levels by approximately 30-35% at 24h, which returned to control levels after 72h. These effects were mediated by CB1R signaling, as they were prevented by both SR141716A and hemopressin. Reduced intracellular TMRE retention by around 1.2-1.3-fold was observed for all concentrations tested at 72h, but this effect was not blocked by CB1R antagonists. Notably, while the higher concentration of ADB (1 μM) increased DRP1 levels around 1.6-fold at 24h, the levels of OPA1 and VDAC, an indirect marker of mitochondrial mass, decreased by 1.6 to 2.1-fold at 72h after exposure to 1nM and 1 μM. Overall, ADB seems to disrupt both mitochondrial function and dynamics during the neurodifferentiation process of NG108-15 cells. Different mechanisms seem to underlie mitochondrial function-related effects, as only the modulation of energy supply was dependent on CB1R activation. However, further research is thus required to better understand the mechanisms underlying cannabinoids' modulation of mitochondrial activity and their role in the SCs-induced enhancement of neurodifferentiation.

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