A Case Series of Synthetic Cannabinoid 5-fluoro-ADB Detection in Human Performance and Postmortem Samples

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Abstract (600 Word limit)

Synthetic cannabinoids of various forms have become readily available in recent years, producing social and health issues in many parts of the world. Synthetic cannabinoids were first developed in a research context as a possible medicinal drug as well as a research aid. They are classified as novel psychoactive substances (NPS) and were developed to mimic the cannabimimetic effects of 9-tetrahydrocannabinol (THC) by interacting with the human endocannabinoid system's CB1 and CB2 receptors. The central and peripheral neurological systems, bone, the heart, and the reproductive system all include CB1 receptors. CB2 receptors are mostly present in the immune system and are hypothesised to play a role in immunosuppression .Apoptosis, cell proliferation, and cytokine regulation are all controlled by apoptosis. CB2 receptors are found in the central nervous system (CNS), but they are found in much lower numbers than CB1 receptors. Some synthetic cannabinoid users reported feelings of relaxation, improved mood, and altered perception, comparable to those generated by cannabis. Although synthetic cannabinoids can have similar effects to cannabis, there have been numerous reports of people who have used them and experienced more severe side effects, such as nausea and vomiting, agitation, hallucinations, paranoia, violent behaviour, acute psychosis, seizures, cardiac complications, brain damage, and death. These herbal mixes' key pharmacologically active components are constantly changing. The components can have a variety of structural characteristics and affinity for the CB1 and CB2 receptors.In comparison to THC As seen by the harmful health effects connected with several of these chemicals, their actions are dangerously unpredictable due to a lack of human pharmacological data.Synthetic cannabinoids are generally advertised as "herbal incense" and are made in secret laboratories. Dried plant material is coated with a solution containing one or more synthetic cannabinoids and marketed in bright foil wrapping with labels declaring "not for human consumption." The dried plant material is usually smoked alone or in combination with marijuana. Vaping synthetic cannabinoids material, like conventional cannabis, is becoming increasingly popular with the usage of electronic cigarette devices.The ease of availability of these drugs in drug paraphernalia shops (headshops), petrol stations, and the Internet, as well as their alleged lack of detectability in regular workplace drug testing and avoiding drug legislation, may contribute to their popularity. Quality control measures for illegally created pharmaceuticals are restricted or non-existent, resulting in a heterogeneous substance that contains chemical components that are not intended to be present in the material, such as precursors or synthesis by-products.

Importance of research (200 Words)

In both human performance and postmortem toxicological examinations, forensic and clinical laboratories must be able to identify synthetic cannabis, according to this study. The discovery of 5-fluoro-ADB was crucial for human performance as well as post-mortem situations when no other psychoactive substance had been found. If 5-fluoro-ADB was not detected in certain case samples, investigators may have reached an incorrect/alternative judgement, resulting in criminal and civil consequences. For example, if no psychoactive

substances were found, the decision to pursue a criminal inquiry into driving under the influence might not have been made. It's also worth noting the significance of gathering and analysing drug paraphernalia located at the accident/death scene. The presence of synthetic cannabinoids in the substance, such as 5-fluoro ADB and MMB-FUBINACA, aided the toxicological analysis. These chemicals were identified and added to the targeted LC-MS/MS technique, allowing laboratories to detect 5-fluoro ADB and metabolites in blood and urine samples submitted for analysis.

Biography   (200 Words)

K Seither is the Professor of Bioengineering and the Principal Investigator of the Systems Biology Research Group in the , Department of Pathology and Laboratory Medicine, Toxicology Laboratory, Miller School of Medicine, University of Miami, Miami, Florida, USA. Dr. K Seither has co-authored more than 360 peer-reviewed research articles and has authored three textbooks, with one more in preparation. His research includes the development of methods to analyze metabolic dynamics (flux-balance analysis, and modal analysis), and the formulation of complete models of selected cells (the red blood cell, E. coli, hybridoma, and several human pathogens). He sits on the editorial broad of several leading peer-reviewed microbiology, bioengineering, and biotechnology journals. He has been invited to give talks and keynote lectures in most of the prestigious genetics meeting.

Information of Institute and Laboratory (200 Words)

The Miller School has been inspiring innovation, breaking new ground in research, delivering breakthrough cures, providing exceptional health care to members of the Miami community, and graduating the best physicians, scientists, entrepreneurs, and instructors for more than 65 years. The University of Miami's Comprehensive Drug Research Facility (CDRC) is a multidisciplinary research centre that has been designated as a Center of Excellence. From the beginning, the facilitation of research through supported core services has been a priority.

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