

MDDM - New Ingredient in Ecstasy Tablets

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Introduction: In 2020, the first Ecstasy tablets were sent to our Institute, in which, in addition to MDMA and MDA, new psychoactive substance - MDDM (3,4-methylenedioxydimethylamphetamine) were also detected.

Methods: The research material consisted of 150 tablets seized in five cases from two cities in Poland between 2020-2022. The qualitative analysis of the tablets was carried out by GC-MS. Quantitative analysis was performed by UHPLC-PDA.

Results: The main ingredient of the tested Ecstasy tablets was MDA. The second most abundant ingredient was MDDM and MDMA was at the lowest purity. All the tablets were shaped like "the head of a star wars stormtrooper" and in off-white colour. The mass of tablets was in range 0.32-0.36 g. The content of psychoactive substances in one tablet was in range: 38-74 mg MDA, 12-28 mg MDDM, and 3-9 mg MDMA.

Conclusions: In the last three years new ingredient - MDDM was introduced to Ecstasy tablets. MDDM produces mild psychoactive effects that are not well characterized. It is a new psychoactive substance, and very little data exists about its pharmacological properties, metabolism, toxicity and dosage. Due to possible interactions between MDDM, MDA and MDMA, taking tablets containing such mixtures can lead to accidental overdose and dangerous synergistic effects.

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A Scientometric Insight into 70 Years of Research in Performance-Enhancing Substances in Sports

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Introduction: The use of performance-enhancing substances is extremely high among athletes. Besides compromising the spirit of fair sport competition, performance-enhancing substances also pose a serious threat to athletes' health. The control of such substances requires a close dialogue between science, medicine, and legislation. Therefore, providing an updated review of the literature on performance-enhancers is paramount.

Methods: The current study aims to identify the key publications and main thematic domains in the literature on performance-enhancing substances. To do so, a scientometric approach was used to analyze an amount of 4330 documents collected from Scopus. A document co-citation analysis was performed, and a network of co-cited documents was generated.

Results: In the network, the most impactful document emerged to be authored by Ntoumanis et al. in 2014, who examined the psychosocial predictors of doping use in physical activity. Furthermore, seven major thematic clusters were identified. Overall, researchers focused on investigating specific substances, such as erythropoietin, growth hormone, and dietary supplements.

Conclusions: In the literature, the discussion about adequate screening methods represented a strong and recurrent thematic interest. Additionally, the pivotal role of physicians and sports medicine practitioners in educating athletes was identified.

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Evaluation of Ligand-Based Models on Opioids Receptors Form Street Emerged Hits

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The misuse of opioids has become a major public health crisis worldwide. Synthetic opioids, in particular, pose a significant danger due to their potency and potential for addiction. In this study, we aimed to evaluate the reliability of ligand-based models for predicting the structure of new synthetic opioids. We used the Molecular Operating Environment (MOE) software to create ligand-based models for three opioid receptors: mu, delta, and kappa. We trained the models on a dataset of known opioids, and then used them to predict the structure of new opioids based on their chemical properties. Our results showed that the ligand-based models were reliable in predicting the structure of new synthetic opioids. In fact, some of the structures predicted by the models were later identified on the street as new synthetic opioids. This demonstrates the potential of in silico modelling to aid in the identification and prediction of new synthetic opioids. In conclusion, our study highlights the utility of ligand-based models in predicting the structure of new synthetic opioids. By leveraging in silico modelling tools, we can potentially identify and predict new synthetic opioids before they emerge on the street, providing a critical tool in the fight against the opioid epidemic.

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Understanding the Opioid Epidemic through Pharmacovigilance Signals: an Analysis of Pharmacovigilance Datasets collecting Adverse Drug Reactions (ADRs) reported to EudraVigilance (EV) and the FDA Adverse Event Reporting System (FAERS) over 10 Years

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Introduction: In the past twenty years, the consumption of opioid medications has reached significant proportions, leading to the so-called opioid epidemic, characterized by cyclical waves of heroin use and the non-medical use of pharmaceutical opioids, increased dependence, and an alarming rate of opioid overdose deaths due to illicitly manufactured fentanyl, fentanyl analogues, and other chemicals, known as novel synthetic opioids (NOSs). The purpose of this study was to determine whether there are pharmacovigilance signals of abuse, misuse, and dependence, and their nature for the following prescription opioids: codeine, dihydrocodeine, fentanyl, oxycodone, pentazocine, and tramadol.

Methods: Both the pharmacovigilance datasets EudraVigilance (EV) and the FDA Adverse Events Reporting System (FAERS) were analyzed. A descriptive analysis of the selected Adverse Drug Reactions (ADRs) was performed, and pharmacovigilance signal measures (i.e., reporting odds ratio, proportional reporting ratio, information component, and empirical Bayesian geometric mean) were computed for preferred terms (PTs) of abuse, misuse, dependence, and withdrawal, as well as PTs eventually related to them (e.g., aggression, euphoric mood, etc.).

Results: From 2003 to 2018, there was an increase in ADR reports for the selected opioids in both datasets. Overall, 16,506 and 130,293 individual ADRs for the selected opioids were submitted to EV and FAERS, respectively. Compared with other opioids, abuse concerns were mostly recorded in relation to fentanyl and oxycodone, while tramadol