Synthetic cathinones in drug-facilitated sexual assault: a case report involving the novel generation substituted cathinone N-ethylpentedrone

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Abstract

Introduction

The use of 3,4-methylenedioxymethamphetamine (MDMA) in drug-facilitated sexual assault (DFSA) is not uncommon. Indeed, the effects associated with the use of such a substance may lead to disinhibition, resulting to inappropriate or riskier acquiescence in sexual activity. Like MDMA, some synthetic cathinones such as mephedrone or methylone also possess marked entactogenic properties, making them potential agents for DFSA. In this context, the authors report a DFSA case involving a novel cathinone derivative, namely *N*-ethyl-pentedrone (NEPD).

Material and Methods

A 36-year-old male was discovered naked and wandering on a public highway. He appeared disoriented and confused, claiming that to have been drugged and sexually assaulted by three men. His

medical history was unremarkable except for occasional cannabis consumption. Given the circumstances, plasma and urine samples were collected for toxicological analyses.

Ethanol concentration determination was performed using gas chromatography with flame ionization detection. Determination and quantification of gamma-hydroxybutyrate and drugs of abuse were performed using liquid chromatography with tandem mass spectrometry. Additionally, a comprehensive non-targeted screening was carried out using liquid chromatography and high resolution mass spectrometry to detect prescription drugs, new psychoactive substances and other toxicants.

Results

The novel generation substituted cathinone NEPD was identified in both urine and plasma by LC-HRMS. Unfortunately, NEPD could not be quantified in plasma due to the absence of the certified reference material. No other substance was detected.

Discussion and conclusion

To the authors' knowledge, only five synthetic cathinones have been associated with DFSA, namely methylenedioxypyrovalerone, 4-methylethcathinone, α -pyrrolidinopentiophenone, mephedrone, α – pyrrolidinohexiophenone, and methylone, which appears to be the most frequently reported. Methylone is the the β-keto analog of MDMA, with which it shares substantial pharmacological similarities. Indeed, the pharmacological effects of methylone are similar to those associated with MDMA. Conversely, little is now regarding NEPD's pharmacological properties in human. Based on subjective reports, NEPD can produce both positive and negative effects in human. However, unlike what is described with methylone or mephedrone, only a small minority of users report slightly entactogenics effects. Such properties theoretically make NEPD more suitable for use in a chemsex context than in DFSA context.