4-AcO-DMT, 1 as 4-OH-DMT (psilocin) and 1 as an unknown substance. Totally 48 samples were presented as 4-AcO-DMT: apart from the aforementioned 46 samples another 2 samples were presented as 4-AcO-DMT were no substance was found. In 37 samples containing 4-AcO-DMT (77.08%) presence of 4-OH-DMT was also found. From 2009 to 2010 9 samples were delivered as 4-AcO-DMT, 16 from 2011 to 2012 and 23 from 2013 to 2014 4-AcO-DMT was the 24th most handled substance during the whole period and representing 62.33% (48 out of 77) of the psilocin related substances [4-AcO-DMT (n = 48), mushrooms (n = 12), 4-AcO-DIPT (n = 12), 4-AcO-MIPT (n = 1) and psilocybin (n = 1)].

Conclusion and Discussion: Results show a recent increase in 4-Aco-DMT analysis that could translate a progressive rise in its recreational use gaining ground to other regulated tryptamines. Whether psilocin found on samples is a result of adulteration, degradation or an analytical artefact should be further studied. Clinical relevance comes from its growing use and the absence of scientific evidence on humans, not even a case report, therefore relying on users subjective experience to predict the effects of the substance. Awareness should be raised to clinicians and scientist in order to promote evidence on this substance clinical effects as well as epidemiological data at a larger scale.

References

[1] Papaseit, E., Farré, M., Schifano, F., Torrens, M., 2014. Emerging drugs in Europe. Current Opinion in Psychiatry, 27, 243–50.
[2] EMCDDA 2015. New psychoactive substances in Europe. An update from the EU Early Warning System. Lisbon.
[3] Nichols, D., Frescas, S., 1999. Improvements to the Synthesis of Psilocybin and a Facile Method for Preparing the O-Acetyl Prodrug of Psilocin. Synthesis 6, 935–938.
[4] Hill S., Thomas S., 2011. Clinical toxicology of newer recreational drugs. Clinical Toxicology 49, 705–719.

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P.6.d.017 Is this really ketamine? The presence of methoxetamine on drug samples delivered as ketamine for substance analysis

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Introduction: New psychoactive substances (NPS) are substances that mimic the effect of traditional drugs, have recently became available and that are not world-wide regulated. They often intend to mimic the effect of controlled drugs [1] becoming a public health concern. In 2014 101 new substances were reported for the first time in the EU [2]. Methoxetamine, an NPS, is a dissociative hallucinogenic acting as a NMDA receptor antagonist clinically and pharmacologically similar to ketamine [3]. It differs from ketamine on its higher potency and duration as well as on its serotonergic effects probably leading to more severe side effects. It is a non-regulated substance in Spain sold as a ketamine substitute [2]. It has been one of the 6 substances requiring risk assessment by EMCDDA during 2014 [3] and case reports described fatal outcomes related with its use [4].

Objective: The aims of this study are (1) to explore the presence of methoxetamine from the samples handled to and analyzed by Spanish harm-reduction service Energy Control and (2) to determine whether methoxetamine is being delivered as ketamine for recreational use.

Materials and Methods: All samples analyzed from January 2010 to March 2015 handled as methoxetamine or in which methoxetamine was found were studied. Energy Control is a Spanish harm-reduction non-governmental organization that offers users the possibility of analyzing the substances they intend to consume. Substance analysis is carried out by Thin Layer Chromatography and Gas Chromatography–Mass Spectrometry.

Results: During the period of study, from 16.6605 samples obtained, methoxetamine was found in 138 (0.83%). From these 138 samples containing methoxetamine, only 69 (50%) were delivered as such, 50 (36%) were delivered as ketamine and 19 (14%) as other substances like (cocaine=3, amphetamine=2 and mephedrone=2, among others). In the 138 samples that contained methoxetamine, other compounds were also found in 42 (30%), being synthesis by-products the most frequent ones (n = 23), followed by unknown substances (n = 23), cafeine (n = 17), mephedrone (n = 6) and MDMA (n = 3), among others.

Conclusion: The results of this study show a significantly growing ratio of samples handled as ketamine actually containing methoxetamine. This fact is clinically relevant since methoxetamine has a longer higher effect and fatal outcomes have been reported as connected to its recreational use. Severe side effects might be even more serious considering that users of the substance probably ignore which substance they are actually using. Despite the increasing number of studies on methoxetamine further evidence is needed to clarify the magnitude of methoxetamine delivered as ketamine and its clinical implications at a higher scale.

References

[1] Papaseit, E., Farré, M., Schifano, F., Torrens, M., 2014. Emerging drugs in Europe. Current Opinion in Psychiatry, 27(4), 243–50.
[2] EMCDDA, 2015. New psychoactive substances in Europe. An update from the EU Early Warning System. Lisbon.
[3] Corazza, O., Schifano, F., 2012. Phenomenon of new drugs on the Internet: the case of ketamine derivative methoxetamine. Human Psychopharmacology, 27(2), 145–9.
[4] Adamowicz, P., Zuba, D., 2015. Fatal intoxication with methoxetamine. Journal of Forensic Sciences, 60 (1), 264–8.
[5] Morris, H., Wallach, J., 2014. From PCP to MXE: A comprehensive review of the non-medical use of dissociative drugs. Drug Testing and Analysis 6 (7–8), 614–632.

P.6.d.018 Delta9-tetrahydrocannabinol (THC) and cannabidiol (CBD) alone and in combination affect brain activity during rest

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Purpose of the study: Δ^9-Tetrahydrocannabinol (THC) and cannabidiol (CBD) are the two most important constituents of cannabis. CBD has gained interest in recent years due to its

antipsychotic properties, and previous studies examining THC and CBD separately have found opposite effects on brain function [1]. Our primary aims were to determine (1) whether THC and CBD, alone and in combination affect brain function during rest and (2) whether these effects are differentially affected by cannabis use status.

Methods: In a double-blind, cross-over, placebo-controlled study, 15 frequent cannabis users (FREQ) and 15 infrequent users/nonuser controls (INFREQ) completed 5 randomised drug sessions with one week washout: (a) Placebo (vehicle); (b) THC 8 mg; (c) CBD 400 mg; (d) THC 8 mg + CBD 4 mg [LoCBD+THC]; (e) THC 12 mg + CBD 400 mg [HiCBD+THC]. Drugs were dissolved in 100% ethanol and vaporised using a Volcano® Vaporiser [2]. Electroencephalogram (EEG) was recorded using 32 channels across the scalp during 5 minutes of rest (eyes opened) before and after drug administration. EEG power was calculated for the following frequency bands: delta (0.5–4 Hz), theta (4–8 Hz), alpha (8–13 Hz), beta (13–30 Hz), gamma1 (30–45 Hz), and gamma2 (55–90 Hz) in frontal, central and parietal regions for the left, middle and right side of the head. Data were log transformed and z-scored based on session for each site and frequency band and baseline corrected by subtracting data before drug administration from data after drug administration. Baseline corrected data were subjected to repeated-measures ANOVAs to examine drug condition effects for each frequency band separately. Only main effects of drug or group are reported below.

Results: Relative to placebo, THC increased EEG power in alpha, beta, gamma1 and gamma2 frequency bands, while CBD increased power in the gamma1 band, with a trend toward increased beta and gamma2 power. The increase in power with THC was greater than that for CBD in alpha, beta, gamma1 and gamma2, whereas THC decreased power compared to CBD in the theta band. LoCBD+THC decreased beta and gamma1 power compared to THC, while HiCBD+THC decreased beta, gamma1, and gamma2 power relative to THC. FREQ users showed decreased alpha power and a trend toward decreased theta power compared to INFREQ users during placebo administration. Decreased alpha power was also evident in FREQ compared to INFREQ during THC and CBD administration. There were no group differences in the combined CBD+THC conditions.

Conclusion: Acute THC, and to a lesser extent CBD, administration increased EEG power during rest. Combining CBD at both low and high doses with THC decreased EEG power, indicating that the combination of CBD and THC may normalise resting state brain function. The reduced alpha power at rest in FREQ users relative to INFREQ users during placebo, THC and to a lesser extent CBD, indicates that chronic cannabis use is associated with altered brain function and also that it changes responsivity to acute cannabinoids. This study extends current knowledge about the impact of THC, and importantly CBD on resting state brain function in frequent and infrequent cannabis users.

References

[1] Bhattacharyya et al., 2010. Opposite effects of delta-9-tetrahydrocannabinol and cannabidiol on human brain function and psychopathology. Neuropsychopharm 35, 764–74.
[2] Solowij et al., 2014. A protocol for the delivery of cannabidiol (CBD) and combined CBD and Δ9-tetrahydrocannabinol (THC) by vaporisation. BMC Pharmacol Toxicol 15, 58.

P.6.d.019 Cannabinoid hyperemesis syndrome; a prevalence study

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Introduction: Cannabis is the illegal drug most used in Europe. Despite its fame of being a soft drug, cannabis use has been related to many health problems. Cannabinoid hyperemesis syndrome (CSH) is a clinical condition present among some chronic cannabis users consisting in cyclic episodes of nausea and vomiting associated to compulsive bathing behaviour usually accompanied by abdominal pain. Despite prokinetic effects of cannabis by stimulating CB1 receptors in central nervous system, in some patients cannabis use produces contrary effects. This is explained by predominant effects of CB1 receptors on digestive tract, which reduces gastric motility, diminishes digestive secretions, and decreases contractility of lower esophageal sphincter. First defined in 2004 in Australia, epidemiology and ethiopathogenesis of this syndrome remains unclear.

Objective: To determine the prevalence of CHS in a drug dependent outpatient unit.

Method: A cross-sectional study was developed to determine the prevalence of CHS. All patients over 18 years old attended at the Cannabis Program at the Addiction Unit from Hospital Clínic de Barcelona since February to April 2014 were interviewed. From the 35 candidates, 22 (65.7%) patients were interviewed after signing informed consent, 1 (0.02%) could not sign the consent because of cognitive disability so was excluded, and 12 (34.3%) rejected to participate. A survey was designed to collect sociodemographic, clinic and diagnostic information about CSH. Psychiatric diagnoses were given according to DSM-V criteria.

Results: From the patients who answered the survey 12 (54%) were men, 19 (86%) were singles and 2 (22.7%) had university education.

In our sample we found a high proportion of psychiatric comorbidity (59%), 3 (13.6%) patients diagnosed with bipolar disorders, 8 (36.5%) with psychotic disorders and 2 (9%) with mixed anxiety depressive disorders.

All patients who answered the questionnaire presented at some point a cannabis use disorder. 18.2% (4) achieved abstinence during the last year, while 81.8% (18) maintained an active consumption of 2.1 joints per day on average.

18.2% (4) presented symptoms suggestive of CHS, partially (9.1% (2)) or the complete triad (9.1% (2)). Clients who presented the whole syndrome, experimented a clinical relieve with hot-showers. Only one of the patients with CHS linked cannabis use to the symptoms. 3 (75%) from the patients consulted to a physician, and were subjected to diagnosis procedures.

Conclusions: According to the results of our survey, Cannabinoid hyperemesis syndrome is an underdiagnosed clinical condition with a prevalence that could reach up to 18% in some special populations.

This syndrome produces high grade of discomfort, misdiagnoses and many unnecessary appointments to the medical specialist that could be avoided by exploring substance abuse disorders.

It should be suspected in emergency and digestive departments in patient with cyclic vomiting syndrome with an unknown cause.

References

[1] European Monitoring Centre for Drugs. 2012. Characteristics of frequent and high risk cannabis users.